LIVING LEGACY TRUST

ASSESSMENT OF THE STATUS AND FUTURE OPPORTUNITIES OF ONTARIO'S SOLID WOOD VALUE-ADDED SECTOR

Research Report
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SECTION 1

BACKGROUND & INTRODUCTION

The Living Legacy Trust was established as a component of Ontario's Living Legacy Strategy to provide an opportunity to expand Ontario's capacity to improve the management of natural resources through the formation of strong partnerships among governments, environmentalists, communities and resource industries. The Trust operates at "arms length" from the Ontario Government and has a five-year "sunset date", with funding available until March of 2004 for nine major initiative areas.

One of these initiative areas — Funding Area 6 — supports the gathering of strategic information on the value-added manufacturing of wood products in Ontario.

Purpose of the Project

The goal of this Funding Area, as stated in the Agreement establishing the Trust, is to initiate project(s) that increase strategic information on value-added manufacturing of wood products. Specifically, the Trust determined that this goal was to be addressed by undertaking a market and sector study to —

- benchmark Ontario's solid wood value-added sector; and,
- define the destination of Ontario's solid wood shipments.

It is these two objectives which form the focus of this engagement.

The Trust has also defined a third objective as part of this initiative — to define the opportunities for specific products or end uses for value-added manufacturing growth —which may be pursued as a further research project that could be undertaken as an outcome of this assignment.

The overall purpose of this study was to collect up-to date, relevant information about Ontario's existing value-added sector by product type and to report on the main local, national and international market destinations. As well, statistics for the entire forest products industry in Ontario were reviewed to establish basic benchmark information that would facilitate future tracking of changes between commodity and value-added production.

This document presents the detailed research findings from the study. A companion summary of the key findings and discussion of the analysis has been produced as a stand-alone document.

Project Team

Jaakko Pöyry Consulting, (JPC), was selected to undertake this study on behalf of the Living Legacy Trust through a competitive bidding process.

Jaakko Pöyry is the world's leading and largest independent consulting organisation serving the forest and forest products industry world wide. For 40 years, the company has been at the leading edge in the process of developing the forest and forest industry sectors around the world. Jaakko Pöyry Group and associate companies now have more than 5,500 employees in 25 countries.

As part of the Group, Jaakko Pöyry Consulting (JPC) focuses on management advisory services by producing facts, ideas and solutions for governments, institutions and private companies wishing to develop and increase the value creation capacity of their forest resources and/or wood processing industries. The company has more than 360 employees and achieved net sales in 1999 of Euro 39.2 million. Regional offices are Helsinki, Singapore and New York, plus country offices including; Canada, Australia, New Zealand, UK, Sweden, Germany, India, Indonesia, Brazil and Argentina.

Having carried out hundreds of studies in more than 100 countries, including 28 National Sector Plans and numerous Industry Sector Analyses on behalf of government, companies and international institutions, JPC's experience and capabilities are well suited to undertaking this important project for the Living Legacy Trust. As well, the company maintains global databases on the Forest and Forest Industry Sector including; resources, mechanical wood and pulp & paper industry, markets, cost competitiveness, economics and demographics, which formed a unique support resource to this project.

Research Objectives & Approach

The work of the study was focused on achieving three objectives —

- Establishing the framework for informed promotion of wood based value added in Ontario, with special emphasis on the solid wood based products;
- Developing an analysis of the sector built on a platform of intellectual capital – knowledge, understanding, relativity and perception of the value added opportunities in Ontario – linked to the fibre and business resources available in Ontario; and,
- Establishing an analytical and benchmarking framework, to prepare the way for a possible second phase - a detailed exploration of identified market potential and growth opportunities for Ontario's value added wood products.

In conducting this assignment, JPC brought together know-how from previous experience dealing with value added opportunities at the product and sector level. The key features of our approach included —

- Analysis of the sector as a flow of sequential stages from logs and fibre to end-use forms, flowing through a value chain characterised by interdependencies and inter-relationships, where weakness in one part of the chain affects all, and where the critical interface — for the purposes of this study — occurs at the transition from commodity to value added production.

- The incorporation of qualitative benchmarking into the analysis, including such factors as industry structure, segment clustering, technical and managerial know-how, use of technology, workforce structure, etc.

- Development of benchmark units that attempted to draw together existing product flows and value added structures as a basis for illustrating potential opportunities for value added industry development in Ontario.

- Introduction of the notion of an initial scenario vision for Ontario's value added sector, as a key milestone against which to measure progress in the future, and as foundation for focusing on appropriate value added rather value added for the sake of value added.

Data Platform — Commodity vs. Value Added

Based on the guidance provided in the Terms of Reference for the project, the consulting team developed a data platform in which the distinction between commodity and value added products was made on the premise that —

- Commodity products are traded on the open market with relatively little differentiation made by buyers between products; and,

- Value Added products were those that were not traded on the open market and were normally sold to users rather than intermediaries.

SECTION 2

DATA DEFINITIONS, DATA DESIGN & BENCHMARKING REGIONS

DATA DEFINITIONS

CAN SIC	US NAICS	EU NACE	EU EUROPROMS	EuroProms Description
25	321	20	20	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
2512	**321113**	**20.10**	**20.10**	**Saw milling and planing of wood; impregnation of wood**
2512	321113	20.10	20.10.10.10	Railway or tramway sleepers (cross-ties) of wood; not impregnated
2549	321213	20.10	20.10.10.32	Coniferous wood sawn or chipped lengthwise; sliced or peeled; of a thickness > 6 mm and finger-jointed or sanded
2549	321912	20.10	20.10.10.34	Coniferous wood; sawn or chipped lengthwise; sliced or peeled; of a thickness > 6mm; planed (excl. finger-jointed or sanded)
2512	321113	20.10	20.10.10.35	Spruce wood (Picea abies Karst.), fir wood (Abies alba Mill.)
2512	321113	20.10	20.10.10.37	Pine wood: Pinus sylvestris L.
2512	321113	20.10	20.10.10.39	Softwood sawn/chipped lengthwise,sliced/peeled and thickness>6mm incl. pencil slats - wood length<=125cm,thickness<12.5mm excl. finger jointed - planed/sanded,spruce/pine
2512	321113	20.10	20.10.10.50	Wood; sawn or chipped lengthwise; sliced or peeled; of a thickness > 6mm; excluding coniferous and tropical woods and oak blocks, strips and friezes
2549	321918	20.10	20.10.10.77	Oak blocks; strips or friezes for parquet or wood block flooring; planed but not assembled (excl. continuously shaped)
2549	321918	20.10	20.10.21.10	Coniferous wood continuously shaped
2549	321918	20.10	20.10.21.53	Non-coniferous wood continuously shaped (excl. blocks; strips and friezes for parquets or wood block flooring; not assembled)
2549	321918	20.10	20.10.21.55	Non-coniferous wood blocks; strips and friezes for parquet or wood block flooring; continuously shaped (excl. assembled)
2591	321114	20.10	20.10.31.16	Rough softwood poles, injected or otherwise impregnated with paint,stains,creosote or other preservatives
2591	321114	20.10	20.10.32.00	Railway or tramway sleepers (cross-ties) of impregnated wood
2591	321114	20.10	20.10.90.00	Treatment; impregnation and preservation of wood (incl. seasoning and drying)

DATA DEFINITIONS

CAN SIC	US NAICS	EU NACE	EU EUROPROMS	EuroProms Description
		20.20	20.20	Manufacture of veneer sheets; manufacture of plywood, laminboard, particle board, fibre board and other panels and boards
2521	321211	20.20	20.20.11.03	Plywood consisting solely of sheets of wood with each ply =< 6mm thickness,with min. one outer ply of tropical wood
2521	321211	20.20	20.20.11.05	Plywood consisting solely of sheets of wood with each ply =< 6mm thick and with min. one outer ply of hardwood excl. of tropical wood
2522	321212	20.20	20.20.11.09	Plywood consisting solely of sheets of wood with each ply < or equal to 6mm thickness and with min. one outer ply of softwood
2521	321211	20.20	20.20.12.33	Plywood,veneered panels and similar laminated wood of min. one outer ply of hardwood,one of chipboard excl. plywood solely of sheets of wood with each ply <=6mm thickness
2521	321211	20.20	20.20.12.35	Other plywood, veneered panels, outer ply non-coniferous wood: block-, lamin-, battenboard
2521, 2522	321211, 321212	20.20	20.20.12.39	Other plywood, veneered panels, at least 1 outer ply of non-coniferous wood
2521, 2522	321211, 321212	20.20	20.20.12.53	Other plywood, veneered panels, at least 1 layer of particle board
2521, 2522	321211, 321212	20.20	20.20.12.55	Other plywood, veneered panels, block-, lamin-, battenboard
2521, 2522	321211, 321212	20.20	20.20.12.59	Other plywood, veneered panels and similar laminated wood
2592	321219	20.20	20.20.13.33	Particle board and similar board of wood unworked or sanded (excl. waferboard or oriented strand board)
2592	321219	20.20	20.20.13.35	Particle board and similar board of wood surfaced with high pressure decorative laminates (excl. waferboard or oriented strand board)
2592	321219	20.20	20.20.13.37	Particle board and similar board of wood surfaced with melamine resin impregnated paper (excl. waferboard or oriented strand board)
2593	321219	20.20	20.20.13.39	Particle board and similar board of wood, others, incl. waferboard
2592	321219	20.20	20.20.13.50	Particle board and similar board of ligneous materials (excl. wood)
2592	321219	20.20	20.20.14.13	Fibreboard of a density > 0.8 g/cm³; not mechanically worked or surface covered
2592	321219	20.20	20.20.14.15	Fibreboard of a density > 0.8 g/cm³ (excl. not mechanically worked or surface covered)
2592	321219	20.20	20.20.14.33	Fibreboard of a density > 0.5 g/cm³ but <= 0.8 g/cm³; not mechanically worked or surface covered
2592	321219	20.20	20.20.14.35	Fibreboard of a density > 0.5 g/cm³ but <= 0.8 g/cm³ (excl. not mechanically worked or surfaced covered)
2592	321219	20.20	20.20.14.53	Fibreboard of a density > 0.35 g/cm³ but <= 0.5 g/cm³; not mechanically worked or surface covered
2592	321219	20.20	20.20.14.55	Fibreboard of a density > 0.35 g/cm³ but <= 0.5 g/cm³ (excl. not mechanically worked or surfaced covered)
2592	321219	20.20	20.20.14.73	Fibreboard of a density <= 0.35 g/cm³; not mechanically worked or surface covered
2592	321219	20.20	20.20.14.75	Fibreboard of a density <= 0.35 g/cm³ (excl. not mechanically worked or surface covered)
2521, 2522	321211, 321212	20.20	20.20.21.13	Veneer sheets,sheets for plywood & other wood sawn lengthwise,sliced/peeled,thickness<=6mm & finger jointed,planed/sanded/small boards for the manufacture of pencils
2521, 2523	321211, 321213	20.20	20.20.21.18	Coniferous and tropical wood veneer sheets and sheets for plywood,sawn lengthwise,sliced or peeled,of a thickness =< 6mm excl. finger-jointed,planed or sanded
2599	321219	20.20	20.20.22.00	Densified wood, in blocks; plates; strips or profile shapes

DATA DEFINITIONS

CAN SIC	US NAICS	EU NACE	EU EUROPROMS	EuroProms Description
		20.30	20.30	Manufacture of builders' carpentry and joinery
2543	321911	20.30	20.30.11.10	Windows; French-windows and their frames of wood
2543	321911	20.30	20.30.11.50	Doors and their frames and thresholds of wood
2543	321911	20.30	20.30.11.53	Doors and their frames and thresholds, of wood, planed
2543	321911	20.30	20.30.11.55	Doors and their frames and thresholds, of wood, worked
2543	321911	20.30	20.30.11.59	Doors and their frames and thresholds, of wood, others
2549	321918	20.30	20.30.12.15	Parquet panels of wood for mosaic floors
2549	321918	20.30	20.30.12.19	Parquet panels of wood (excl. those for mosaic floors)
2512	321113	20.30	20.30.12.30	Shuttering of wood for concrete constructional work
2511	321112	20.30	20.30.12.50	Shingles and shakes of wood
2549	321213, 321214	20.30	20.30.13.00	Builders' joinery and carpentry of wood excl. windows,french-windows and doors,their frames/thresholds,parquet panels,shuttering for concrete constructional work - shingles,shakes
2549	321918	20.30	20.30.13.01	Builders' joinery and carpentry, of wood, battenboard
2549	321918	20.30	20.30.13.03	Builders' joinery and carpentry, of wood, for walls
2549	321918	20.30	20.30.13.05	Builders' joinery and carpentry, of wood, for stairs
2549	321918	20.30	20.30.13.07	Builders' joinery and carpentry, of wood, for sauna
2549	321213, 321214	20.30	20.30.13.09	Builders' joinery and carpentry, of wood, others
2541	321992, 321991	20.30	20.30.20.00	Prefabricated buildings of wood

DATA DEFINITIONS

CAN SIC	US NAICS	EU NACE	EU EUROPROMS	EuroProms Description
		20.40	20.40	Manufacture of w ooden containers
2561	321920	20.40	20.40.11.33	Flat pallets and pallet collars of w ood
2561	321920	20.40	20.40.11.35	Box pallets and load boards of w ood (excl. flat pallets)
2561	321920	20.40	20.40.12.13	Cases; boxes; crates; drums and similar packings of w ood (excl. cable drums)
2561	321920	20.40	20.40.12.15	Cable-drums of w ood
2561	321920	20.40	20.40.12.50	Casks; barrels; vats; tubs; and coopers products and parts thereof of w ood (incl. staves)
		20.51	20.51	Manufacture of other products of w ood
2599	321999	20.51	20.51.11.00	w ood
2599	321999	20.51	20.51.12.00	Tablew are and kitchenw are of w ood
2599	321999	20.51	20.51.13.00	ornaments,coat/hat racks,office letter trays,ash trays,pen-trays,ink stands
2599	321999	20.51	20.51.14.10	Wooden frames for paintings; photographs; mirrors or similar objects
2599	321999	20.51	20.51.14.50	Other articles of w ood (excl. pallet collars)
2599	321999	20.51	20.51.14.55	Coffin
2599	321999	20.51	20.51.14.59	Other articles of w ood, n.e.c. (excl. pallet collars)

DATA DEFINITIONS

CAN SIC	US NAICS	EU NACE	EU EUROPROMS	EuroProms Description
2612	337121	36.11	36.11.12.50	Upholstered seats with wooden frames (incl. three piece suites) (excl. swivel seats)
2649	337211	36.11	36.11.12.55	Upholstered seats, with wooden frames, used in office
2692	337127	36.11	36.11.12.59	Upholstered seats, with wooden frames, nes other than for office
2611	337122	36.11	36.11.12.90	Non-upholstered seats with wooden frames (excl. swivel seats)
2699	337215	36.11	36.11.14.10	Wooden parts for seats (excl. for medical, surgical dental or veterinary seats, for barbers' and similar chairs, of a
2649	337211	36.12	36.12.12.50	Wooden furniture of a kind used in offices, nes, height <= 80 cm
2649	337211	36.12	36.12.12.53	Wooden furniture of a kind used in offices, other tables, height <= 80 cm
2649	337211	36.12	36.12.12.55	Other wooden furniture, used in offices, cupboards and shelves, height <= 80 cm
2649	337211	36.12	36.12.12.70	Wooden furniture used in offices, cupboards with doors, cabinets, height > 80 cm
2699	337215	36.12	36.12.12.73	Wooden furniture used in offices, componibles elements furniture separation, height > 80 cm
2649	337211	36.12	36.12.12.75	Other wooden furniture used in offices, cupboards and shelves, height > 80 cm
2649	337211	36.12	36.12.12.90	Other office wooden furniture, height > 80 cm (excl. cupboards with doors, shutters or flaps, filing, card index
2649	337211	36.12	36.12.12.95	Wooden furniture, compatibles, height > 80 cm
2649	337211	36.12	36.12.12.99	Wooden furniture, other, height > 80 cm
2699, 2549	337215, 337212	36.12	36.12.13.00	
2542	33711	36.13	36.13.10.50	Wooden units for fitted kitchens
2542	33711	36.13	36.13.10.90	Wooden kitchen furniture (excl. units for fitted kitchens)
2611	337122	36.14	36.14.12.30	Wooden bedroom furniture (excl. builders' fittings for cupboards to be built into walls, mattress supports, lamps
2611	337122	36.14	36.14.12.35	Wooden beds
2611	337122	36.14	36.14.12.39	Wooden furniture for the bedroom : others
2611	337122	36.14	36.14.12.50	Wooden furniture for the dining-room and living-room (excl. floor standing mirrors, seats)
2611	337122	36.14	36.14.13.00	Other wooden furniture excl. bedroom,dining-,living-room,kitchen office,shop,medical,surgical,dental/veterinary
2542	33711	36.14	36.14.13.03	Wooden furniture for the bathroom
2611	337122	36.14	36.14.13.05	Wooden furniture for the garden
2611	337122	36.14	36.14.13.09	Wooden furniture : others
2699	337215	36.14	36.14.15.50	Parts of wooden furniture excl. for medical,surgical,dental or veterinary furniture,seats - for specially designed
2691	33791	36.15	36.15.11.00	Mattress supports (incl. wooden or metal frames fitted with springs or steel wire mesh, upholstered mattress bases, with wooden slats, divans)

COMMODITY – VALUE ADDED

EU NACE in Black CAN SIC in Blue US NAICS in Red
X = Level of Data Available

COMMODITY

dd201 Sawmilling and Planing of Wood, Impregnation
- 2512 321113 Sawmills
- 2591 321114 Wood Preservation

dd202 Manufacture of Veneer, Panels and Boards
- 2521 321211 Hardwood Veneer and Plywood
- 2522 321212 Softwood Veneer and Plywood
- 321219 Reconstituted Wood Product Manufacturing
  - 2592 Particle Board Industry
  - 2593 Wafer Board Industry

VALUE-ADDED

dd203 Manufacture of Builders' Carpentry and Joinery
- 2511 321112 Shingles and Shakes
- 2542 33711 Wood Kitchen Cabinet and Bathroom Millwork Industries
- 2543 321911 Wood Windows and Doors
- 2549 Other Millwork Industries
  - 321213 Engineered Wood (excl. Truss)
  - 321214 Truss Manufacturing
  - 321918 Other Millwork (including Flooring)
  - 321912 Cut Stock, Resawing Lumber, Planin

dd204 32192 Wood Container and Pallet Manufacturing
- 2561 Wooden Box and Pallet Industry
- 2581 3399953 Coffin and Casket Industry

dd2051 2599 321999 Other Wood Products

dd361 Furniture
2611, 2612, 2619, 2691, 2649, 2692, 2699
337121, 337122, 337127, 337129, 337211, 337212, 337215, 3379

2541 Prefabricated Wooden Buildings Industry
- 321991 Mobile Home Manufacturing
- 321992 Prefabricated Wood Buildings

The distinction between commodity and value added was made on the premise that:

- Commodities were products that traded on the open market with relatively little differentiation made by buyers between products.
- Value Added products were those that were not traded on the open market and were normally sold to users rather than intermediaries.

The data platform and product codes are illustrated opposite.

DESIGN OF DATA PLATFORM

EU NACE in Black CAN SIC in Blue US NAICS in Red
X = Level of Data Available

COMMODITY				Ontario TOTAL	AB-BC-PQ TOTAL	US Great Lakes TOTAL	Nordic TOTAL	Denmark TOTAL	Germany TOTAL
dd201	Sawmilling and Planing of Wood, Impregnation			SUM	SUM	SUM	X	X	X
	2512	321113	Sawmills	X	X	X			
	2591	321114	Wood Preservation	X	X	X			
dd202	Manufacture of Veneer, Panels and Boards			SUM	SUM	SUM	SUM	SUM	SUM
	2521	321211	Hardwood Veneer and Plywood	X	X	X	X	X	X
	2522	321212	Softwood Veneer and Plywood	X	X	X	X	X	X
	321219		Reconstituted Wood Product Manufacturing	SUM	SUM	SUM	SUM	SUM	SUM
		2592	Particle Board Industry	X	X	X	X	X	X
		2593	Wafer Board Industry	X	X	X	X	X	X
VALUE-ADDED				**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**
dd203	Manufacture of Builders' Carpentry and Joinery			SUM	SUM	SUM	SUM	SUM	SUM
	2511	321112	Shingles and Shakes	X	X	X	X	X	X
	2542	33711	Wood Kitchen Cabinet and Bathroom	X	X	X	X	X	X
	Millwork Industries			SUM	SUM	SUM	SUM	SUM	SUM
	2543	321911	Wood Windows and Doors	X	X	X	X	X	X
	2549		Other Millwork Industries	X	X	SUM	SUM	SUM	SUM
		321213	Engineered Wood (excl. Truss)			X	X	X	X
		321214	Truss Manufacturing			X	X	X	X
		321918	Other Millwork (including Flooring)			X	X	X	X
		321912	Cut Stock, Resawing Lumber, Planing			X			
dd204	32192		Wood Container and Pallet Manufacturing	SUM	SUM	SUM	X	X	X
	2561		Wooden Box and Pallet Industry	X	X	X			
	2581	3399953	Coffin and Casket Industry	X	X	X			
dd2051	2599	321999	Other Wood Products	X	X	X	X	X	X
dd361	Furniture			SUM	SUM	SUM	X	X	X
	2611, 2612, 2619, 2691, 2649, 2692, 2699			X	X	X			
	337121, 337122, 337127, 337129, 337211, 337212, 337215, 33791					X			
2541	Prefabricated Wooden Buildings Industry			X	X	SUM	X	X	X
	321991		Mobile Home Manufacturing			X			
	321992		Prefabricated Wood Buildings			X			

DATA SOURCES

BENCHMARK SECTOR	SOURCE
Canadian Provinces	Statistics Canada ( ) Strategis Canada ( )
US Great Lakes	US Census Bureau ( ) STAT-USA ( )
Nordic	Eurostat Datashop Luxembourg (http://www.datashop.org) Finnish Statistical Centre (http://www.tilastokeskus.fi) Swedish Statistical Office (http://www.scb.se)
Denmark	Eurostat Datashop Luxembourg (http://www.datashop.org) Danish Statistical Office (http://www.dst.dk)
Germany	Eurostat Datashop Luxembourg (http://www.datashop.org) German Statistical Office (http://www.statistik-bund.de) Association of the German Woodworking Industry ( )

Throughout this study, statistics and other information have been sourced from Jaakko Pöyry databases and from industry contacts when public domain statistics have been unavailable,

BENCHMARK REGIONS

Two types of benchmark regions have been included in this analysis: those similar to Ontario with a diverse wood using value chain, (eg. other Canadian Provinces, US Great Lakes States, Nordic countries), and those very specifically targeted at value added, where learning platforms in value-added would exist, (eg. Denmark, Germany.)

Other Canada

The other three major Canadian wood-producing provinces, (BC, Alberta and Quebec), have been included as a national baseline, for benchmarking both industry output and policy initiatives to support value added wood products manufacturing, which have been initiated in these jurisdictions with varying degrees of success. (Alberta was added after the study began in order to reflect recent developments there.)

US Great Lakes (New York, Pennsylvania, Ohio, Michigan, Indiana, Illinois, Wisconsin and Minnesota)

A region with a mix of primary production and extensive value added manufacturing, with both linked to Ontario product flows. A mix of forest types – boreal and St. Lawrence Basin mixed forest – and market accessibility similar to that experienced by producers in Ontario. The Great Lakes States are also Ontario's closest major market, and value added manufacturers there compete with Ontario manufacturers both in Ontario and in other key US markets.

BENCHMARK REGIONS

Nordic - Finland and Sweden

The Nordic countries demonstrate wood and fibre flows, as well as processing and end-uses, that are broadly similar to Ontario with respect to resource base and geographical position relative to their respective major markets in Europe. They are useful as a benchmarking unit because of their apparent similarities to Ontario.

Denmark

With virtually no wood resources, Denmark has developed a sizeable value added wood products sector. It has been included as a benchmark region because the success of its wood products industries illustrate the importance of a number of qualitative determinants of competitiveness.

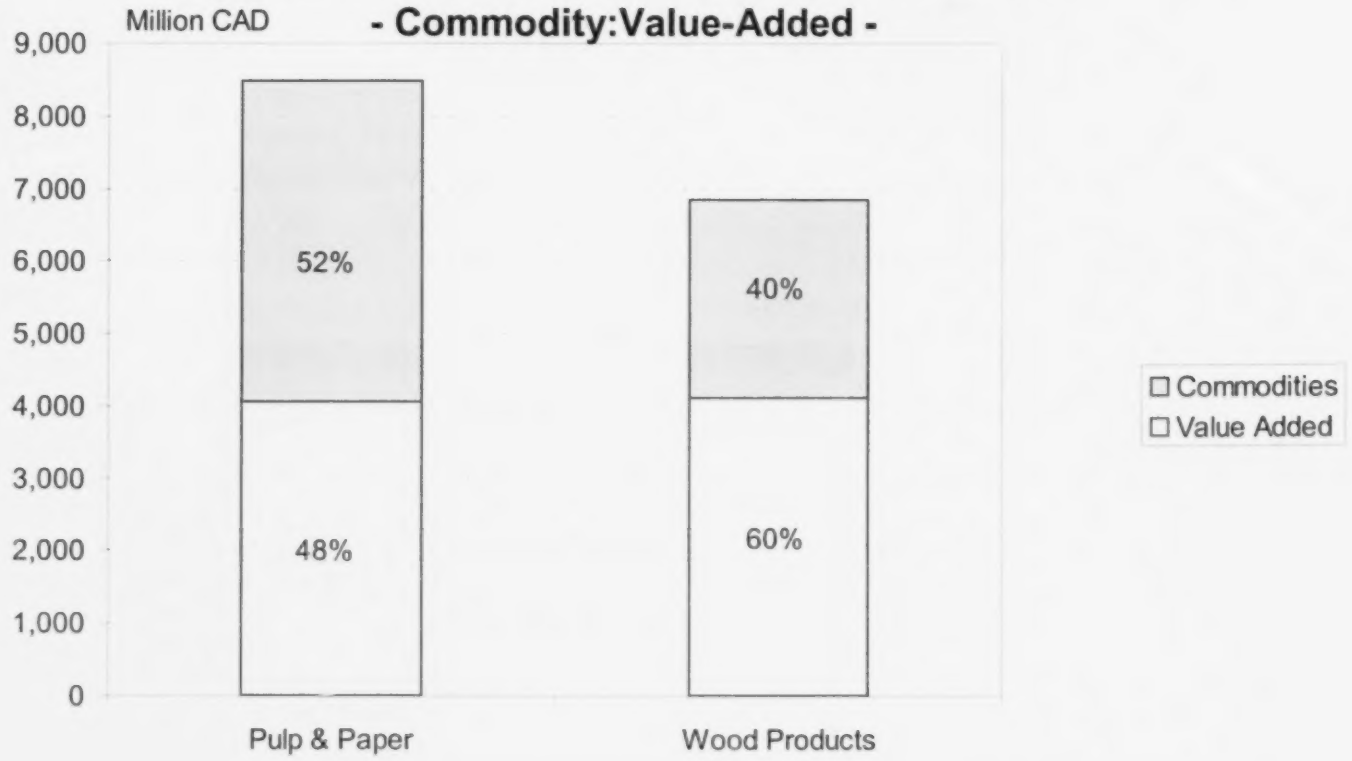
Germany

A high value added focus and strongly clustered, especially in the wood panels sector. Germany is both the largest producer of and market for value added wood products in Europe. Its value added wood products industries are recognized as successful and technically sophisticated and its leadership position warrants its inclusion as a benchmark unit.

SECTION 3

OVERVIEW – ONTARIO'S FOREST PRODUCTS SECTOR - DATA TABLES

VALUE OF SHIPMENTS/SALES - ONTARIO



- Output of value added wood products in Ontario is roughly equal to output of value added paper products, and the ratio of value added to commodity production is higher for wood products than for pulp and paper.
- With recent growth in the furniture segment, we estimate the value added share of wood products shipments has increased to 65%, (though is not yet reflected in published statistical data).

ONTARIO WOOD PRODUCTS SHIPMENTS, EMPLOYMENT, & EXPORTS, 1997

EU NACE in Black CAN SIC in Blue US NAICS in Red

				Value of Shipments Million CAD	# of Employees	Value of Exports Million CAD
COMMODITIES				**2,741**	**13,612**	**1,753**
dd201			Sawmilling and Planing of Wood, Impregnation	1,859	9,297	1,119
	2512	321113	Sawmills	1,740	8,965	1,118
	2591	321114	Wood Preservation	119	332	1
dd202			Manufacture of Veneer, Panels and Boards	882	4,315	634
	2521	321211	Hardwood Veneer and Plywood	371	2,460	244
	2522	321212	Softwood Veneer and Plywood		0	3
	321219		Reconstituted Wood Product Manufacturing	511	1,855	387
		2592	Particle Board Industry	302	1,088	122
		2593	Wafer Board Industry	209	767	264
VALUE ADDED				**4,104**	**36,749**	**3,015**
dd203			Manufacture of Builders' Carpentry and Joinery	1,380	11,479	469
	2511	321112	Shingle and Shake Mills		0	1
	2542	33711	Wood Kitchen Cabinet and Bathroom Millwork Industries	528	4,626	206
				852	6,853	262
	2543	321911	Wood Windows and Doors	387	2,771	107
	2549		Other Millwork Industries	465	4,082	155
		321213	Engineered Wood (excl. Truss)	16		
		321214	Truss Manufacturing	166		
		321918	Other Millwork (including Flooring)	283		
		321912	Cut Stock,Resawing Lumber,Planing			
dd204	32192		Wood Container and Pallet Manufacturing	208	1,696	69
	2561		Wooden Box and Pallet Industry	208	1,696	48
	2581	3399953	Coffin and Casket Industry	n/a	n/a	21
dd2051	2599	321999	Other Wood Products	70	1,046	83
dd361	Furniture			2,447	22,528	2,394
	2611, 2612, 2619, 2691, 2649, 2692, 2699					
	337121, 337122, 337127, 337129, 337211, 337212, 337215, 33791					
2541			Prefabricated Wooden Buildings Industry	110	770	36
	321991		Mobile Home Manufacturing			
	321992		Prefabricated Wood Buildings			

ONTARIO WOOD EXPORTS, BY MARKET, 1997

EXPORT MARKETS
EU NACE in Black CAN SIC in Blue US NAICS in Red

1000 CAD **COMMODITIES**				**Total** **1,753,115**	**Top3** **1,668,846**	**Others** **84,270**	**Country 1**		**Country 2**		**Country 3**	
dd201	Sawmilling and Planing of Wood, Impregnation			1,119,131	1,057,856	61,275		1,024,387		18,235		15,234
	2512	321113	Sawmills	1,118,019	1,056,788	61,231	US	1,023,428	UK	18,178	Germany	15,182
	2591	321114	Wood Preservation	1,112	1,067	44	US	958	Cuba	56	UK	52
dd202	Manufacture of Veneer, Panels and Boards			633,985	610,990	22,995		602,035		4,936		4,019
	2521	321211	Hardwood Veneer and Plywood	243,724	221,061	22,663	US	212,535	Germany	4,689	Sweden	3,837
	2522	321212	Softwood Veneer and Plywood	3,450	3,245	205	US	3,060	Chile	110	Japan	75
		321219	Reconstituted Wood Product Manufacturing	386,811	386,685	126		386,441		137		107
		2592	Particle Board Industry	122,448	122,396	52	US	122,287	Hong Kong	62	China	46
		2593	Wafer Board Industry	264,363	264,289	74	US	264,154	Israel	75	Belgium	61
VALUE ADDED				**3,014,821**	**2,950,505**	**64,316**		**2,911,925**		**28,005**		**10,575**
dd203	Manufacture of Builders' Carpentry and Joinery			467,926	449,031	18,895		434,080		9,525		5,427
	2542	33711	Wood Kitchen Cabinet and Bathroom Vanity	205,705	203,047	2,658	US	202,214	UK	447	Japan	386
	2543	321911	Wood Windows and Doors	106,847	100,918	5,930	US	97,221	Russia	2,278	UK	1,419
	2549	Other Millwork Industries		155,374	145,066	10,308	US	134,644	UK	6,800	Hong Kong	3,622
		321213	Engineered Wood (excl. Truss)									
		321214	Truss Manufacturing									
		321918	Other Millwork (including Flooring)									
		321912	Cut Stock,Resawing Lumber,Planing									
dd204	32192	Wood Container and Pallet Manufacturing		68,982	68,687	295		68,304		196		187
	2561	Wooden Box and Pallet Industry		47,823	47,712	111	US	47,467	UK	125	Greece	120
	2581	3399953	Coffin and Casket Industry	21,159	20,975	184	US	20,837	UK	71	Bermuda	67
dd2051	2599	321999	Other Wood Products	83,420	81,129	2,291	US	72,620	Netherlands	8,146	China	363
dd361	Furniture			2,394,493	2,351,658	42,835	US	2,336,921	UK	10,139	Japan	4,598
	2611, 2612, 2619, 2691, 2649, 2692, 2699 337121, 337122, 337127, 337129, 337211, 337212, 337215, 33791											

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ONTARIO OUTPUT PER UNIT OF MANUFACTURED FIBRE, 1997

EU NACE in Black CAN SIC in Blue US NAICS in Red

CAD/m^3 COMMODITIES				Sales/m^3	Exports/m^3	Employees/ m^3
				159	**102**	**79**
dd201	Sawmilling and Planing of Wood, Impregnation			108	65	54
	2512	321113	Sawmills	101	65	52
	2591	321114	Wood Preservation	7	0	2
dd202	Manufacture of Veneer, Panels and Boards			51	37	25
	2521	321211	Hardwood Veneer and Plywood	371	14	14
	2522	321212	Softwood Veneer and Plywood	0	0	0
	321219		Reconstituted Wood Product Manufacturing	511	22	11
		2592	Particle Board Industry	302	7	6
		2593	Wafer Board Industry	209	15	4
VALUE ADDED				**288**	**190**	**214**
dd203	Manufacture of Builders' Carpentry and Joinery			130	42	67
	2511	321112	Shingle and Shake Mills	0	0	0
	2542	33711	Wood Kitchen Cabinet and Bathroom Vanity	31	12	27
	Millwork Industries			49	15	40
	2543	321911	Wood Windows and Doors	22	6	16
	2549		Other Millwork Industries	27	9	24
		321213	Engineered Wood (excl. Truss)	2		
		321214	Truss Manufacturing			
		321918	Other Millwork (including Flooring)			
		321912	Cut Stock,Resawing Lumber,Planing			
dd204	32192		Wood Container and Pallet Manufacturing	12	4	10
	2561		Wooden Box and Pallet Industry	12	3	10
	2581	3399953	Coffin and Casket Industry	0	1	
dd2051	2599	321999	Other Wood Products	4	5	6
dd361	Furniture			142	139	131
	2611, 2612, 2619, 2691, 2649, 2692, 2699					
	337121, 337122, 337127, 337129, 337211, 337212, 337215, 33791					
2541	Prefabricated Wooden Buildings Industry			6	2	4
	321991		Mobile Home Manufacturing			
	321992		Prefabricated Wood Buildings			

VALUE OF SHIPMENTS/SALES

- Pulp and Paper -

VALUE OF SHIPMENTS
CAN SIC in Blue

Million CAD		Ontario
COMMODITIES		**4,435**
2711	Pulp Industry	901
2712	Newsprint Industry	2,273
2713	Paperboard Industry	
2714	Building Board Industry	
2719	Other Paper Industries	1,260
VALUE ADDED		**4,046**
2721	Asphalt Roofing Industry	259
2731	Folding Carton and Set-Up Box Industry	777
2732	Corrugated Box Industry	1,090
2733	Paper Bag Industry	75
2791	Coated and Treated Paper Industry	596
2792	Stationery Paper Products Industry	292
2793	Paper Consumer Products Industry	357
2799	Other Converted Paper Products Industries n.e.c.	601

EXPORT VALUE/m^3 OF FIBRE USED

VALUE ADDED				**190**
dd203	Manufacture of Builders' Carpentry and Joinery			42
	2511	321112	Shingle and Shake Mills	0
	2542	33711	Wood Kitchen Cabinet and Bathroom Vanity	12
	Millwork Industries			15
	2543	321911	Wood Windows and Doors	6
	2549	Other Millwork Industries		9
		321213	Engineered Wood (excl. Truss)	
		321214	Truss Manufacturing	
		321918	Other Millwork (including Flooring)	
		321912	Cut Stock,Resawing Lumber,Planing	
dd204	32192	Wood Container and Pallet Manufacturing		4
	2561	Wooden Box and Pallet Industry		3
	2581	3399953	Coffin and Casket Industry	1
dd2051	2599	321999	Other Wood Products	5
dd361	Furniture			139
	2611, 2612, 2619, 2691, 2649, 2692, 2699			
	337121, 337122, 337127, 337129, 337211, 337212, 337215, 33791			
2541	Prefabricated Wooden Buildings Industry			2
	321991 Mobile Home Manufacturing			
	321992 Prefabricated Wood Buildings			

- Based on 1997 cut for solid wood primaries of 17,206,268 M^3

SALES/m^3 OF FIBRE USED

VALUE ADDED				**288**
dd203	Manufacture of Builders' Carpentry and Joinery			130
	2511	321112	Shingle and Shake Mills	0
	2542	33711	Wood Kitchen Cabinet and Bathroom Vanity	31
	Millwork Industries			49
	2543	321911	Wood Windows and Doors	22
	2549	Other Millwork Industries		27
		321213	Engineered Wood (excl. Truss)	2
		321214	Truss Manufacturing	
		321918	Other Millwork (including Flooring)	
		321912	Cut Stock,Resawing Lumber,Planing	
dd204	32192	Wood Container and Pallet Manufacturing		12
	2561	Wooden Box and Pallet Industry		12
	2581	3399953	Coffin and Casket Industry	
dd2051	2599	321999	Other Wood Products	4
dd361	Furniture			142
	2611, 2612, 2619, 2691, 2649, 2692, 2699			
	337121, 337122, 337127, 337129, 337211, 337212, 337215, 33791			
2541	Prefabricated Wooden Buildings Industry			6
	321991	Mobile Home Manufacturing		
	321992	Prefabricated Wood Buildings		

- Based on 1997 cut for solid wood primaries of 17,206,268 M^3

EMPLOYMENT/m^3 OF FIBRE USED

VALUE ADDED				**214**
dd203	Manufacture of Builders' Carpentry and Joinery			67
	2511	321112	Shingle and Shake Mills	
	2542	33711	Wood Kitchen Cabinet and Bathroom Vanity	27
	Millwork Industries			40
	2543	321911	Wood Windows and Doors	16
	2549		Other Millwork Industries	24
		321213	Engineered Wood (excl. Truss)	
		321214	Truss Manufacturing	
		321918	Other Millwork (including Flooring)	
		321912	Cut Stock,Resawing Lumber,Planing	
dd204	32192		Wood Container and Pallet Manufacturing	10
	2561		Wooden Box and Pallet Industry	10
	2581	3399953	Coffin and Casket Industry	
dd2051	2599	321999	Other Wood Products	6
dd361	Furniture			131
	2611, 2612, 2619, 2691, 2649, 2692, 2699			
	337121, 337122, 337127, 337129, 337211, 337212, 337215, 33791			
2541	Prefabricated Wooden Buildings Industry			4
	321991		Mobile Home Manufacturing	
	321992		Prefabricated Wood Buildings	

- Based on 1997 cut for solid wood primaries of 17,206,268 M^3

SECTION 4

COMPARATIVE PERFORMANCE MEASURES

VALUE OF SHIPMENTS/SALES

EU NACE in Black CAN SIC in Blue US NAICS in Red

Million CAD **COMMODITIES**				Ontario **2,741**	AB-BC-PQ **16,538**	US Great Lakes **7,012**	Nordic **10,329**	Denmark **454**	Germany **10,699**	Germany w/ small **10,699**
dd201	Sawmilling and Planing of Wood, Impregnation			1,859	14,555	4,563	8,946	250	6,322	6,322
	2512	321113	Sawmills	1,740	14,382	3,539				
	2591	321114	Wood Preservation	119	173	1,025				
dd202	Manufacture of Veneer, Panels and Boards			882	1,983	2,448	1,383	204	4,377	4,377
	2521	321211	Hardwood Veneer and Plywood	371	33	640	631	12	877	877
	2522	321212	Softwood Veneer and Plywood	0	999	0	321	0	0	0
	321219		Reconstituted Wood Product Manufacturing	511	950	1,809	431	191	3,500	3,500
		2592	Particle Board Industry	302	439	460	431	191	3,500	3,500
		2593	Wafer Board Industry	209	511	1,349	0	0	0	0
VALUE ADDED				**4,104**	**4,992**	**25,560**	**8,352**	**4,877**	**41,480**	**69,954**
dd203	Manufacture of Builders' Carpentry and Joinery			1,380	2,492	14,567	3,568	1,871	15,399	43,013
	2511	321112	Shingle and Shake Mills	0	298	0	0	0	0	0
	2542	33711	Wood Kitchen Cabinet and Bathroom	528	585	5,065	432	333	5,176	5,197
	Millwork Industries			852	1,609	9,502	3,135	1,537	10,223	37,817
	2543	321911	Wood Windows and Doors	387	608	5,606	840	804	4,221	
	2549		Other Millwork Industries	465	1,002	3,896	2,296	733	6,001	
		321213	Engineered Wood (excl. Truss)	16	154	0	201	50	432	
		321214	Truss Manufacturing	166	243	818	63	39	323	
		321918	Other Millwork (including Flooring)	283	605	968	2,032	644	5,246	
		321912	Cut Stock,Resawing Lumber,Planing			2,110				
dd204	32192		Wood Container and Pallet Manufacturing	208	205	2,163	346	78	1,014	1,014
	2561		Wooden Box and Pallet Industry	208	148	2,046				
	2581	3399953	Coffin and Casket Industry	0	57	117				
dd2051	2599	321999	Other Wood Products	70	263	1,724	184	219	235	1,115
dd361	Furniture 2611, 2612, 2619, 2691, 2649, 2692, 2699 337121, 337122, 337127, 337129, 337211, 337212, 337215, 33791			2,447	2,031	7,223	4,254	2,710	24,832	24,811
2541	Prefabricated Wooden Buildings Industry			110	313	4,439	921	102	2,296	2,296
	321991		Mobile Home Manufacturing			2,840				
	321992		Prefabricated Wood Buildings			1,599				

Furniture – For Europe – non wood elements included

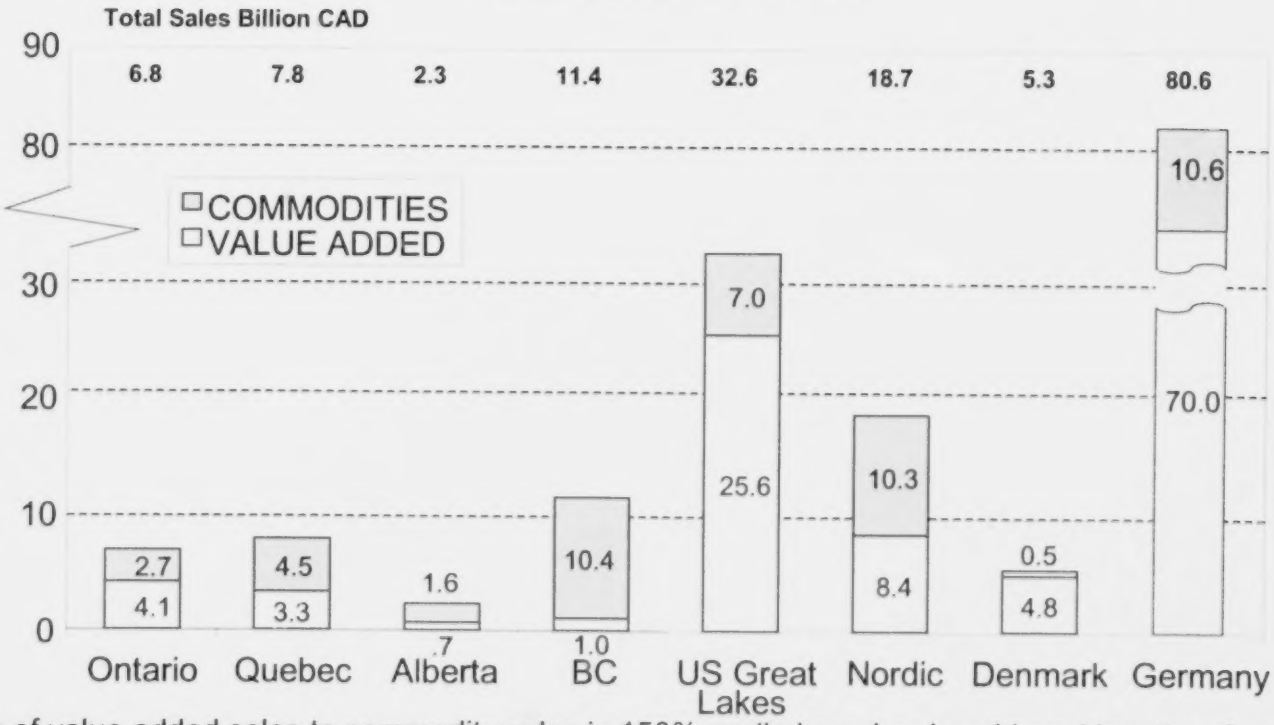
VALUE OF SHIPMENTS/SALES

EU NACE in Black CAN SIC in Blue US NAICS in Red

				Ontario	Quebec	Alberta	BC
Million CAD							
COMMODITIES				**2,741**	**4,551**	**1,601**	**10,385**
dd201			Sawmilling and Planing of Wood, Impregnation	1,859	4,027	1,283	9,244
	2512	321113	Sawmills	1,740	3,965	1,253	9,164
	2591	321114	Wood Preservation	119	62	31	80
dd202			Manufacture of Veneer, Panels and Boards	882	524	318	1,141
	2521	321211	Hardwood Veneer and Plywood	371	33	0	0
	2522	321212	Softwood Veneer and Plywood	0	0	89	910
	321219		Reconstituted Wood Product Manufacturing	511	491	229	230
		2592	Particle Board Industry	302	273	43	123
		2593	Wafer Board Industry	209	218	186	107
VALUE ADDED				**4,104**	**3,291**	**650**	**1,050**
dd203			Manufacture of Builders' Carpentry and Joinery	1,380	1,289	335	869
	2511	321112	Shingle and Shake Mills	0	37	7	254
	2542	33711	Wood Kitchen Cabinet and Bathroom	528	371	58	156
	Millwork Industries			852	881	270	459
	2543	321911	Wood Windows and Doors	387	371	71	166
	2549		Other Millwork Industries	465	509	199	293
		321213	Engineered Wood (excl. Truss)	16	34	65	55
		321214	Truss Manufacturing	166	80	73	90
		321918	Other Millwork (including Flooring)	{ 283	{ 395	{ 61	{ 148
		321912	Cut Stock,Resawing Lumber,Planing				
dd204	32192		Wood Container and Pallet Manufacturing	208	163	24	18
	2561		Wooden Box and Pallet Industry	208	107	24	18
	2581	3399953	Coffin and Casket Industry	n/a	57	n/a	n/a
dd2051	2599	321999	Other Wood Products	70	166	11	86
dd361			Furniture	2,447	1,673	280	78
	2611, 2612, 2619, 2691, 2649, 2692, 2699						
	337121, 337122, 337127, 337129, 337211, 337212, 337215, 33791						
2541			Prefabricated Wooden Buildings Industry	110	100	96	118
	321991		Mobile Home Manufacturing				
	321992		Prefabricated Wood Buildings				

VALUE OF SHIPMENTS/SALES

- Commodity:Value-Added -

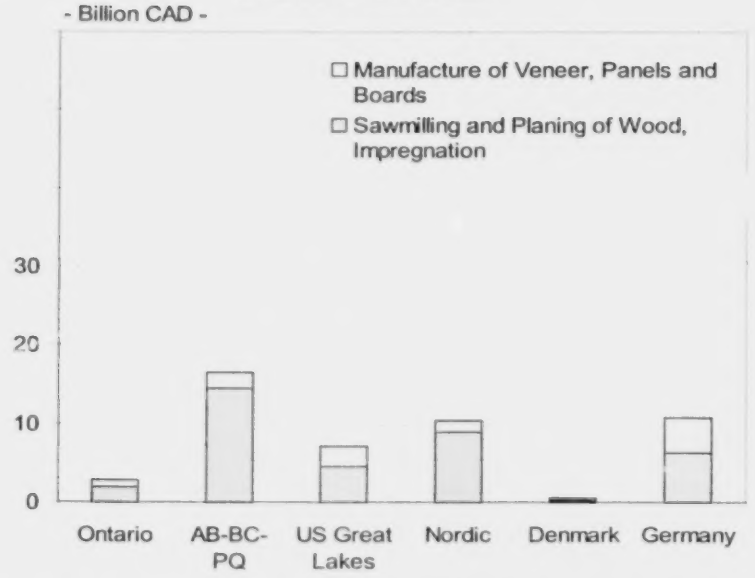


- Ontario's ratio of value added sales to commodity sales is 150%, well above levels achieved by other Canadian Provinces and by the Nordic Region.
- BC and Alberta, being distant from markets, are dominated by large primary industries which produce proportionately less value added output than other benchmark areas.
- Europe and the Great Lakes States, both being part of large markets, possess more highly developed value added industries, indicating that value adding activities generally locate close to or in the consuming market
- Denmark's performance demonstrates that timber resources are not essential to development of a successful secondary wood products sector.

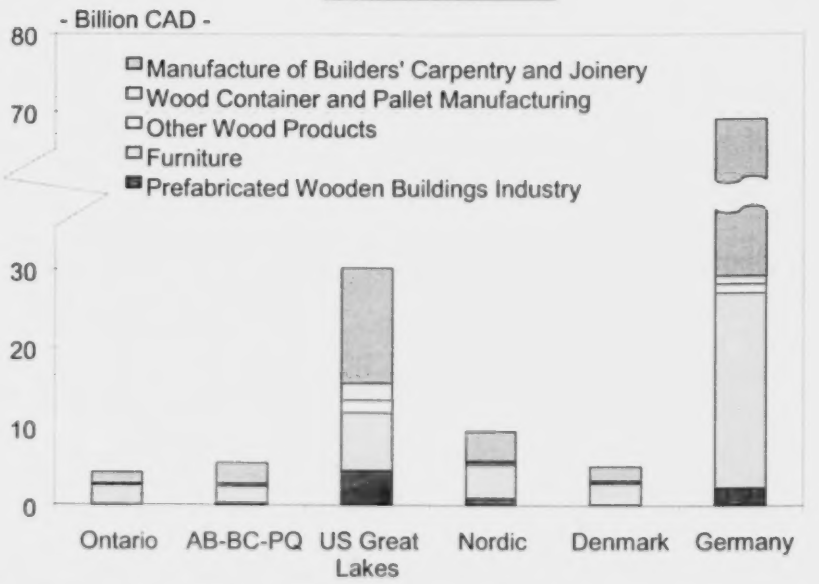
VALUE OF SHIPMENTS/SALES

- Commodities, Value Added -

Commodities



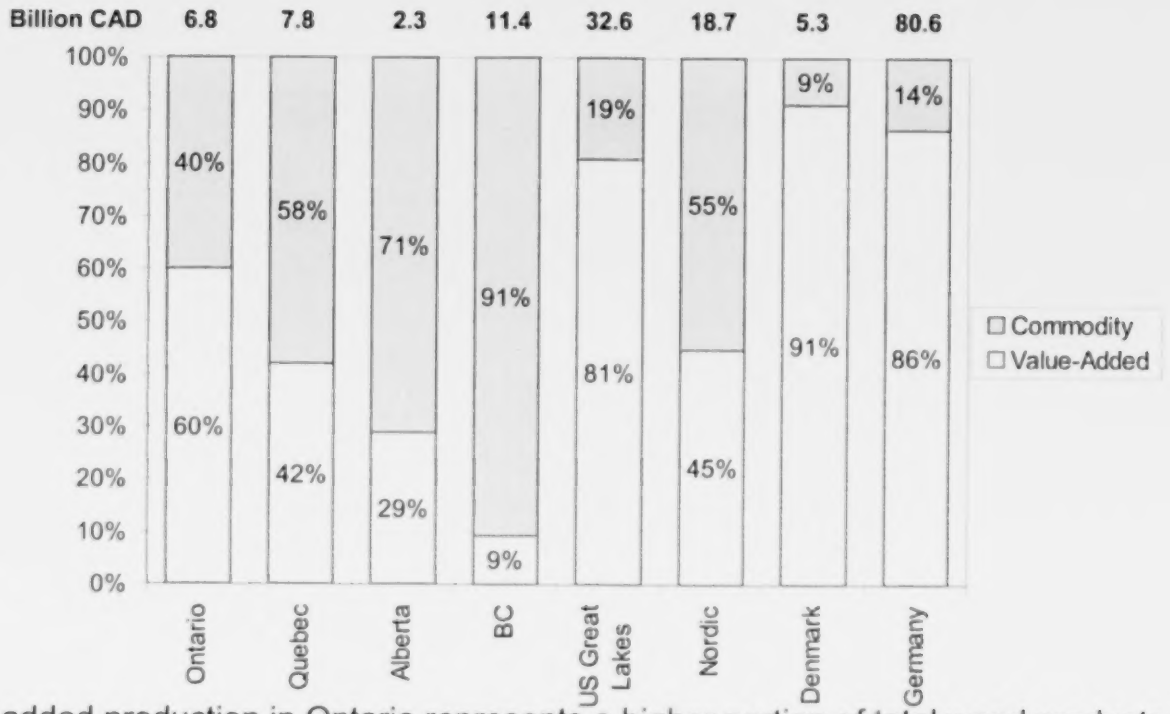
Value Added



- Ontario exhibits similar patterns to other benchmark jurisdictions, with furniture manufacturing representing the largest value added segment. However, builders' joinery and carpentry less well developed than in other regions.
- Large domestic markets in Germany and the Great Lakes supports development of wider range of manufacturing activities within the value added segment.

Readers should note that data for the furniture industries is focused on furniture products for which the primary input material is wood; however, some other materials, by necessity, cannot be excluded or extracted from the data.

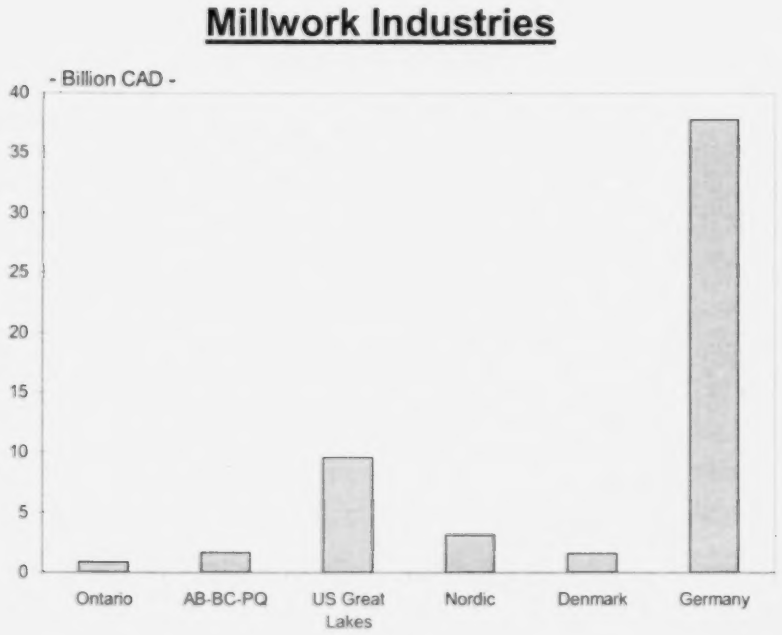
VALUE ADDED SALES/TOTAL SALES

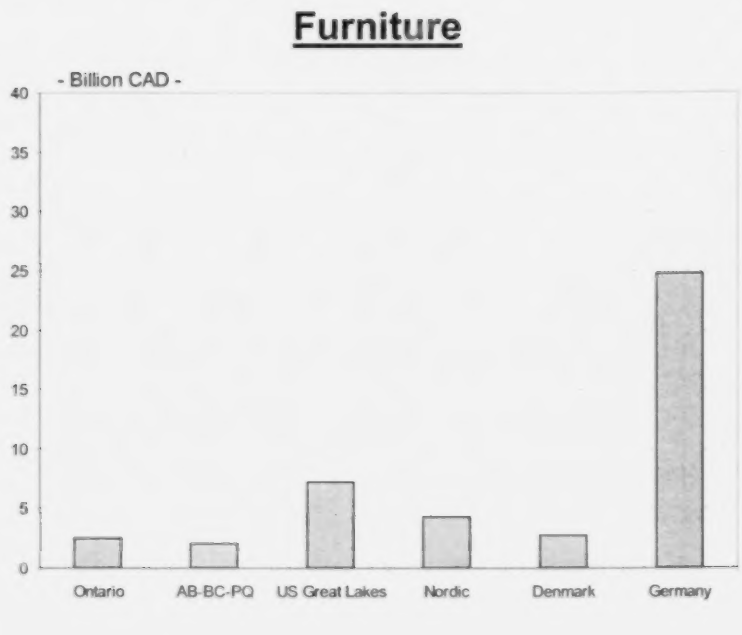


- Value added production in Ontario represents a higher portion of total wood products shipments than in all other benchmark areas except the Great Lakes States, Denmark & Germany.
- Unlike all other benchmark areas, Denmark does not have any large scale primary processing forest industry. Its value-added sector relies almost exclusively imported primary products.
- In the Nordic countries there are some products which would be classified as commodities in their market but would be classified as value added in a North American context, (cut stock and millwork blanks). This may tend to understate "value added' output there compared to North American jurisdictions.

VALUE OF SHIPMENTS/SALES

- Millwork Industries, Furniture -

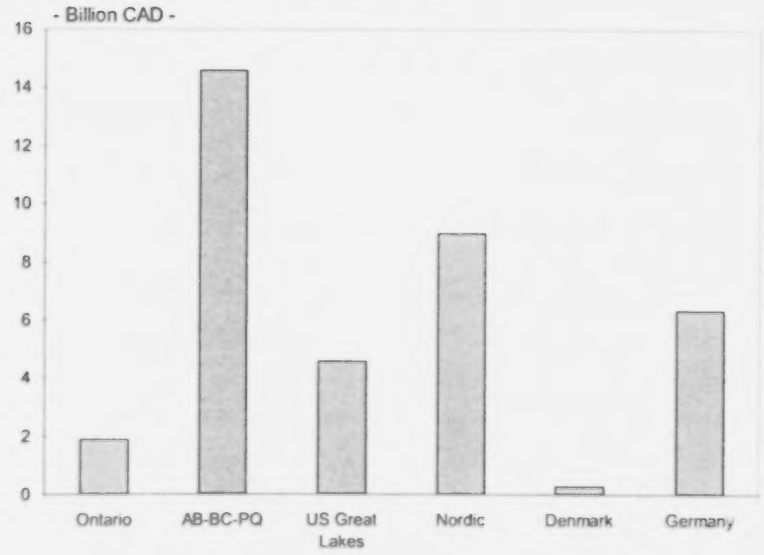




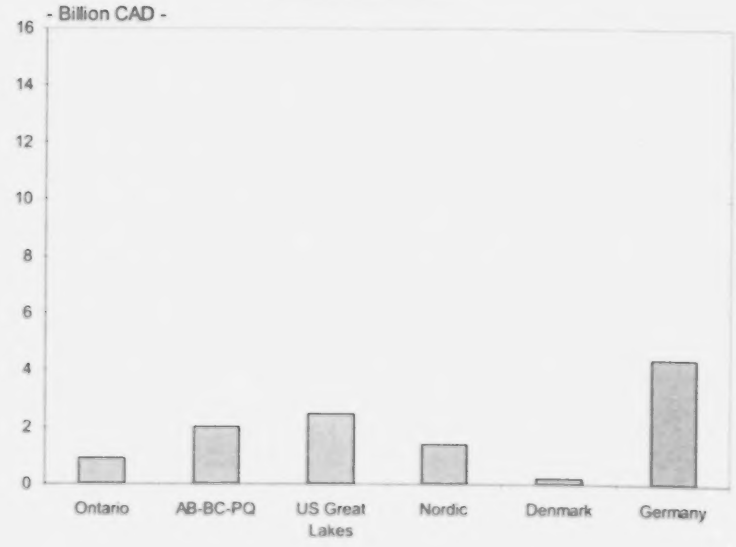
VALUE OF SHIPMENTS/SALES

- Sawmills, Panel Mills -

Sawmills



Panel Mills



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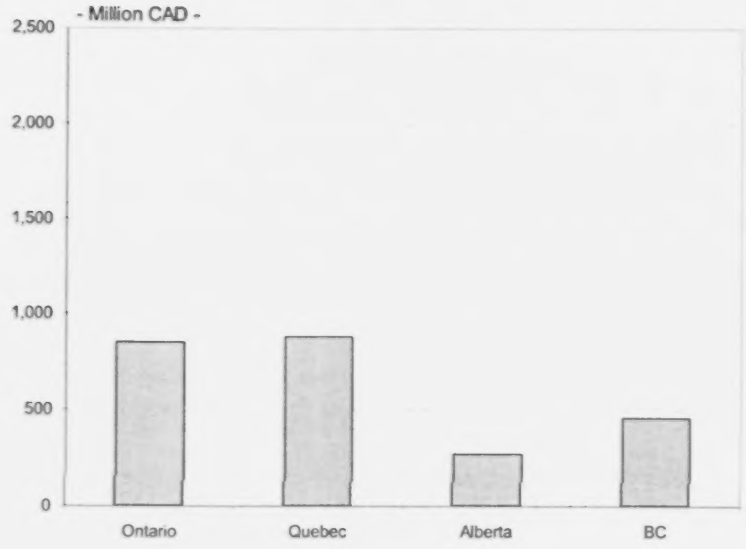
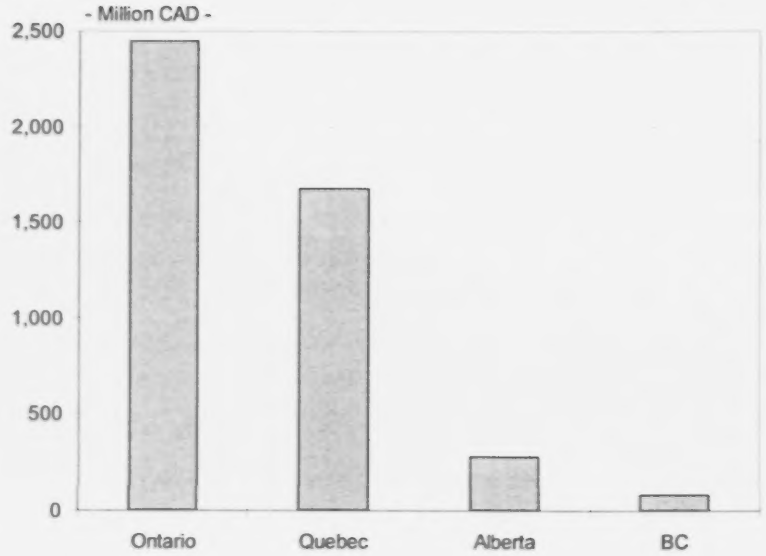
VALUE OF SHIPMENTS/SALES

- Canadian Provinces -

Millwork Industries



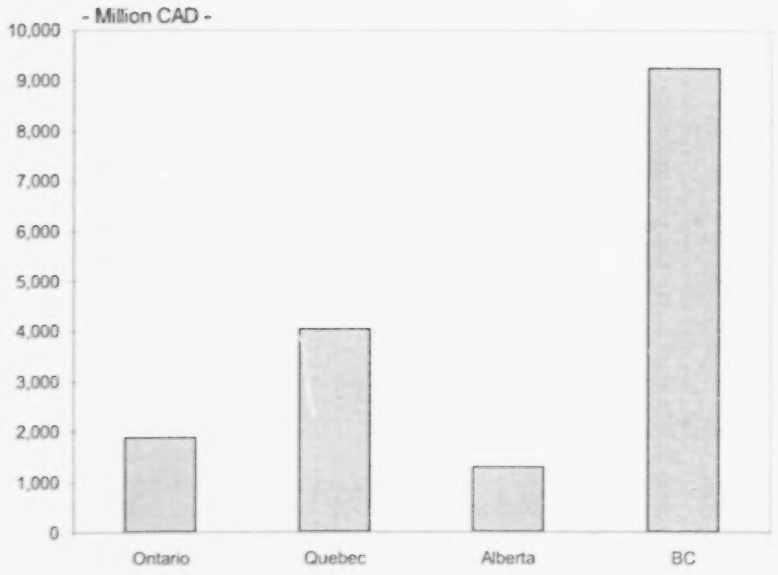
Furniture



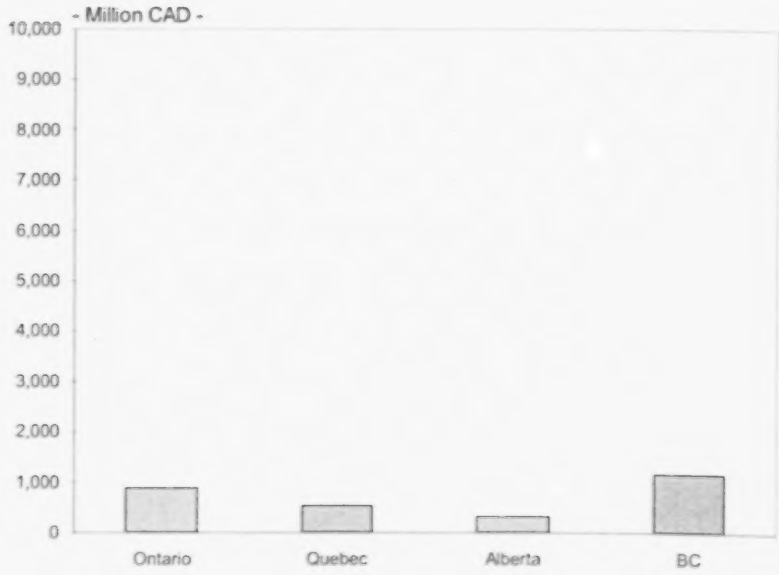
VALUE OF SHIPMENTS/SALES

- Canadian Provinces -

Sawmills



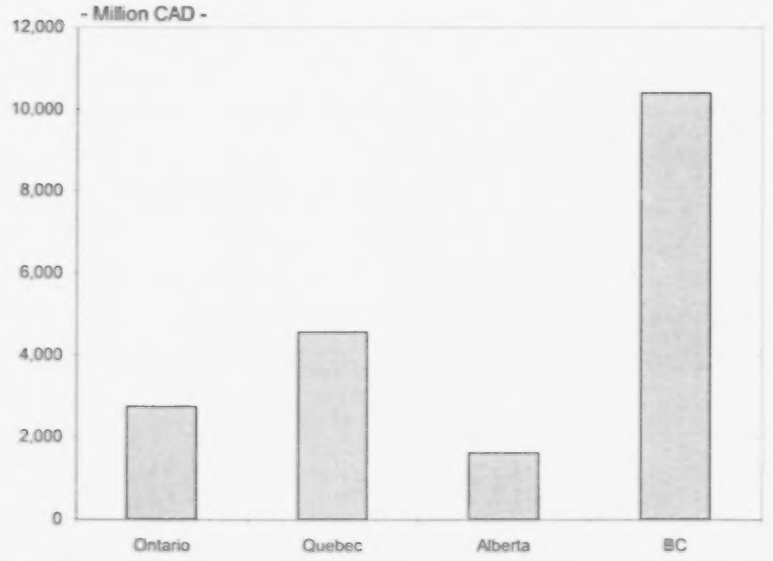
Panel Mills



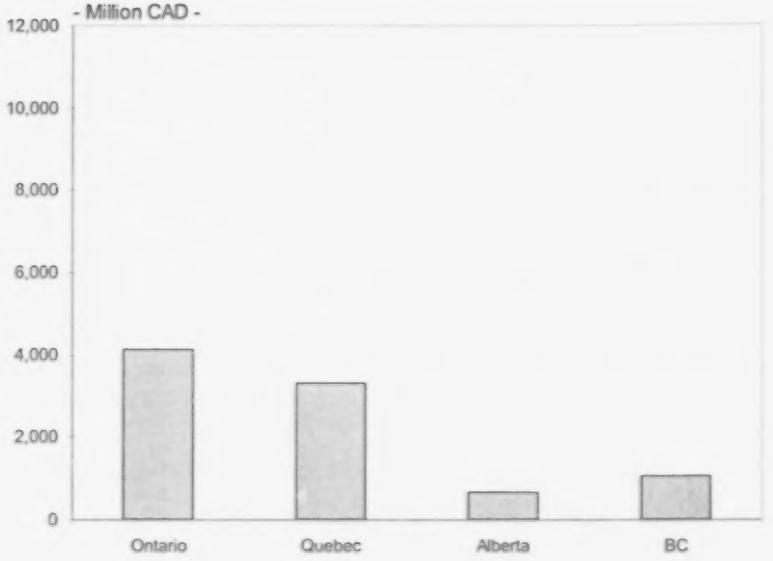
VALUE OF SHIPMENTS/SALES

- Canadian Provinces -

Commodities



Value Added



EMPLOYMENT BY SEGMENT, ALL BENCHMARK UNITS

EU Nace in Black CAN SIC in Blue US Naics in Red

				Ontario	AB-BC-PQ	US Great Lakes	Nordic	Denmark	Germany	Germany w/ small
COMMODITIES				**13,612**	**58,269**	**30,658**	**35,987**	**2,391**	**45,085**	**45,085**
dd201	Sawmilling and Planing of Wood, Impregnation			9,297	50,333	19,712	26,681	1,197	24,407	24,407
	2512	321113	Sawmills	8,965	49,766	18,122				
	2591	321114	Wood Preservation	332	567	1,590				
dd202	Manufacture of Veneer, Panels and Boards			4,315	7,936	10,946	9,306	1,194	20,678	20,678
	2521	321211	Hardwood Veneer and Plywood	2,460	225	4,434	5,560	100	4,142	4,142
	2522	321212	Softwood Veneer and Plywood	0	4,038	0		0	0	0
	321219		Reconstituted Wood Product Manufacturing	1,855	3,673	6,512	3,746	1,094	16,536	16,536
		2592	Particle Board Industry	1,088	1,867	1,637	3,746	1,094	16,536	16,536
		2593	Wafer Board Industry	767	1,806	4,875				
VALUE ADDED				**36,749**	**45,069**	**185,507**	**62,611**	**29,231**	**237,587**	**463,873**
dd203	Manufacture of Builders' Carpentry and Joinery			11,479	20,320	105,720	26,393	10,962	78,709	325,200
	2511	321112	Shingle and Shake Mills	0	1,599	0	0	0	0	0
	2542	33711	Wood Kitchen Cabinet and Bathroom	4,626	6,212	33,840	3,341	1,867	24,252	24,495
	Millwork Industries			6,853	12,509	71,880	23,052	9,095	54,454	300,706
	2543	321911	Wood Windows and Doors	2,771	5,301	26,702				
	2549		Other Millwork Industries	4,082	7,208	22,589				
		321213	Engineered Wood (excl. Truss)			0				
		321214	Truss Manufacturing			4,719				
		321918	Other Millwork (including Flooring)			7,855				
		321912	Cut Stock,Resawing Lumber,Planing			10,015				
dd204	32192		Wood Container and Pallet Manufacturing	1,696	2,128	17,300	2,689	511	5,052	5,052
	2561		Wooden Box and Pallet Industry	1,696	1,356					
	2581	3399953	Coffin and Casket Industry	0	772					
dd2051	2599	321999	Other Wood Products	1,046	2,258	13,579	2,683	957	10,826	15,040
dd361	Furniture			22,528	20,363	48,906	30,846	16,801	143,003	118,580
	2611, 2612, 2619, 2691, 2649, 2692, 2699									
	337121, 337122, 337127, 337129, 337211, 337212, 337215, 33791									
2541	Prefabricated Wooden Buildings Industry			770	2,845	20,020				
	321991		Mobile Home Manufacturing			12,003				
	321992		Prefabricated Wood Buildings			8,017				

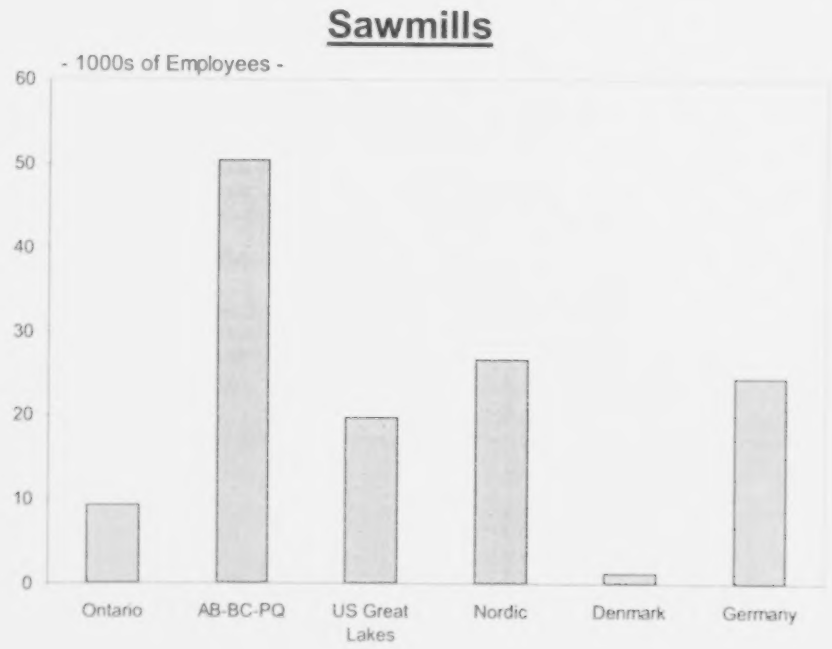
EMPLOYMENT BY SEGMENT, CANADIAN PROVINCES

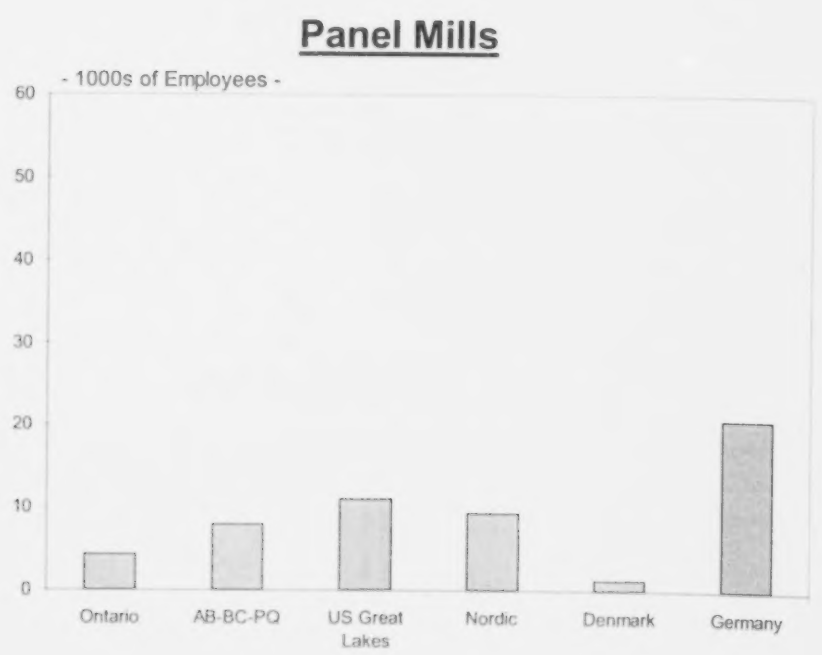
EU NACE in Black CAN SIC in Blue US NAICS in Red

				Ontario	Quebec	Alberta	BC
COMMODITIES				**13,612**	**19,684**	**5,692**	**32,893**
dd201	Sawmilling and Planing of Wood, Impregnation			9,297	17,543	4,588	28,202
	2512	321113	Sawmills	8,965	17,378	4,456	27,932
	2591	321114	Wood Preservation	332	165	132	270
dd202	Manufacture of Veneer, Panels and Boards			4,315	2,141	1,104	4,691
	2521	321211	Hardwood Veneer and Plywood	2,460	225	0	0
	2522	321212	Softwood Veneer and Plywood	0	0	300	3,738
	321219		Reconstituted Wood Product Manufacturing	1,855	1,916	804	953
		2592	Particle Board Industry	1,088	1,140	164	563
		2593	Wafer Board Industry	767	776	640	390
VALUE ADDED				**36,749**	**31,593**	**6,160**	**7,316**
dd203	Manufacture of Builders' Carpentry and Joinery			11,479	11,525	2,982	5,813
	2511	321112	Shingle and Shake Mills	0	416	54	1,129
	2542	33711	Wood Kitchen Cabinet and Bathroom	4,626	3,831	695	1,686
	Millwork Industries			6,853	7,278	2,233	2,998
	2543	321911	Wood Windows and Doors	2,771	3,372	763	1,166
	2549		Other Millwork Industries	4,082	3,906	1,470	1,832
		321213	Engineered Wood (excl. Truss)				
		321214	Truss Manufacturing				
		321918	Other Millwork (including Flooring)				
		321912	Cut Stock,Resawing Lumber,Planing				
dd204	32192		Wood Container and Pallet Manufacturing	1,696	1,742	250	136
	2561		Wooden Box and Pallet Industry	1,696	970	250	136
	2581	3399953	Coffin and Casket Industry	n/a	772	n/a	n/a
dd2051	2599	321999	Other Wood Products	1,046	1,341	140	777
dd361	Furniture			22,528	16,985	2,788	590
	2611, 2612, 2619, 2691, 2649, 2692, 2699						
	337121, 337122, 337127, 337129, 337211, 337212, 337215, 33791						
2541	Prefabricated Wooden Buildings Industry			770	893	1,227	725
	321991		Mobile Home Manufacturing				
	321992		Prefabricated Wood Buildings				

EMPLOYEES

- Sawmills, Panel Mills -

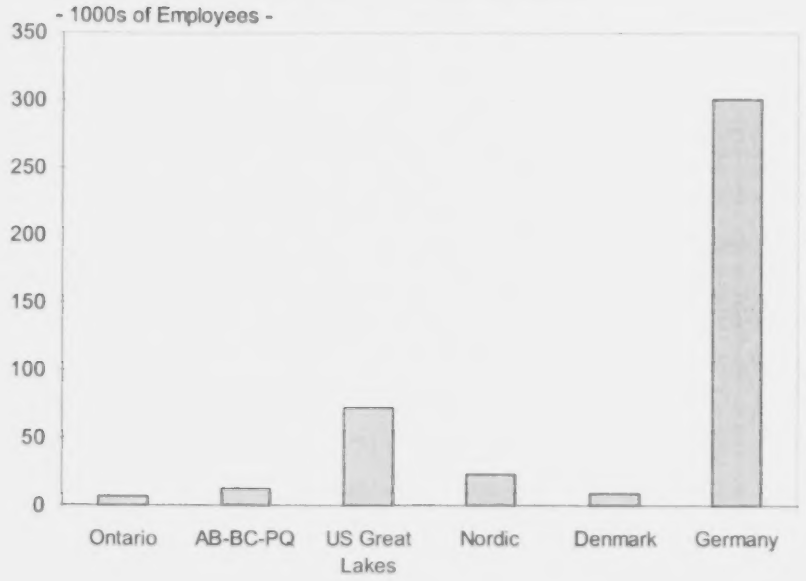




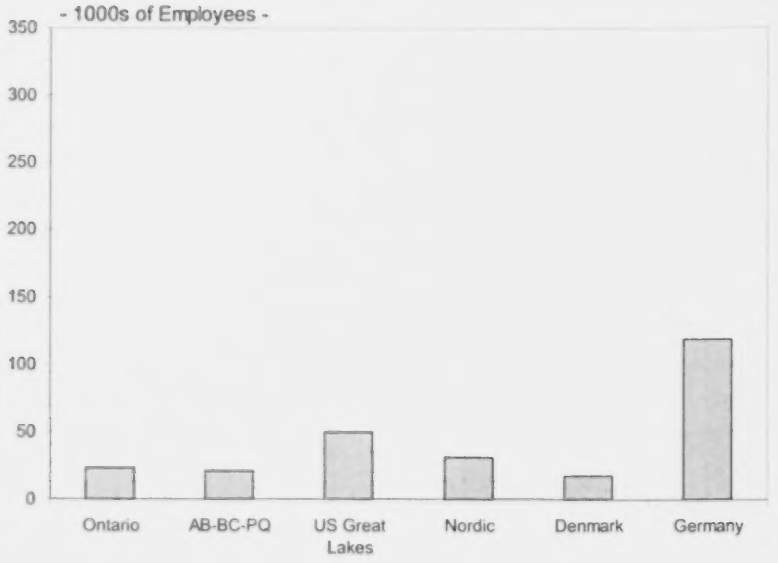
EMPLOYEES

- Millwork Industries, Furniture -

Millwork Industries



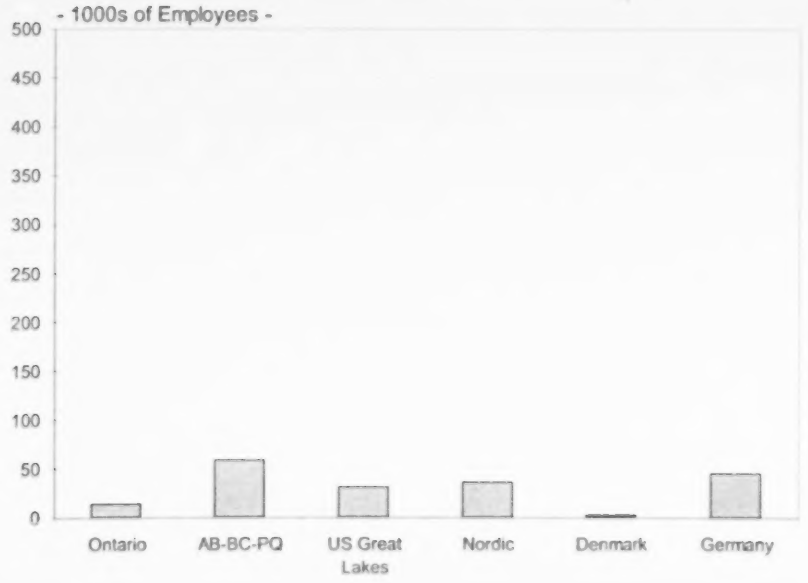
Furniture



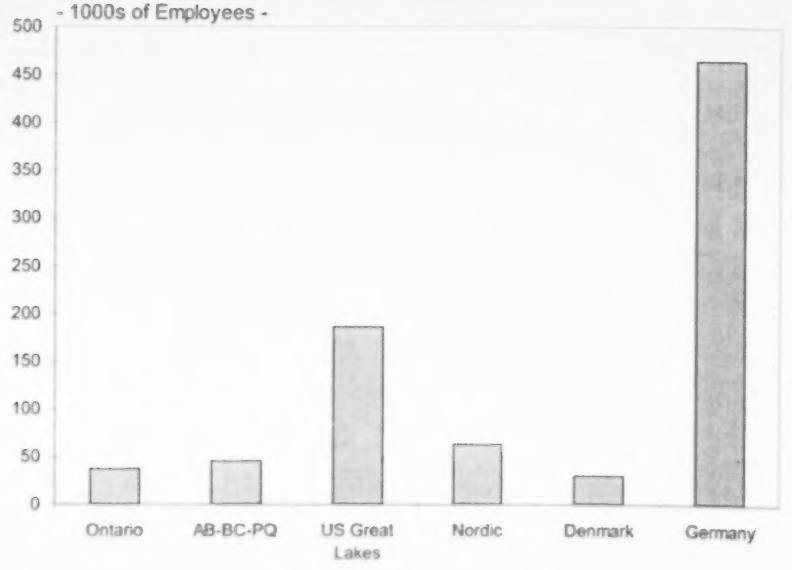
EMPLOYEES

- Commodities, Value Added -

Commodities



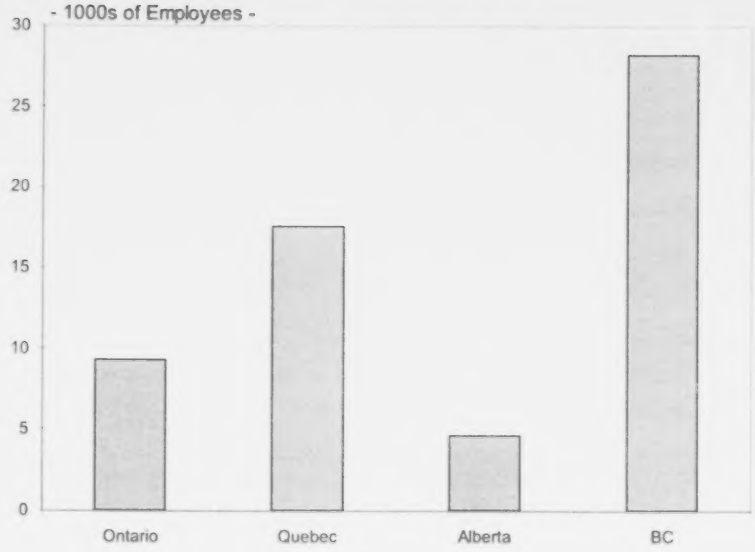
Value Added



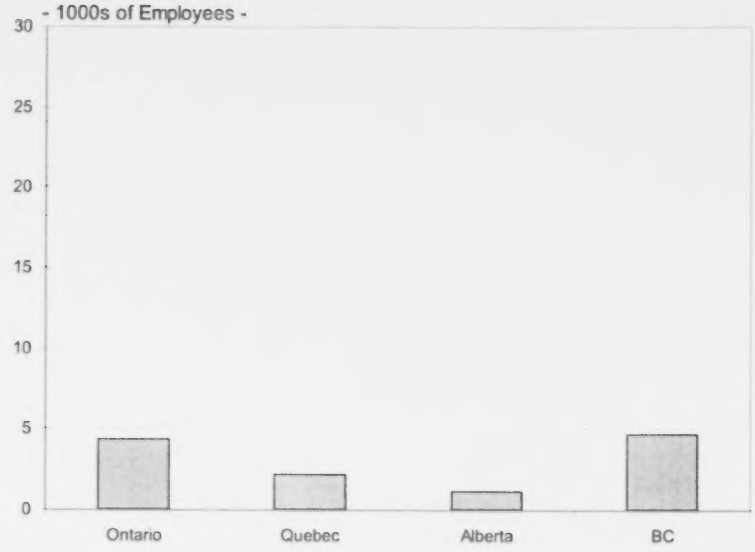
EMPLOYEES

- Canadian Provinces -

Sawmills



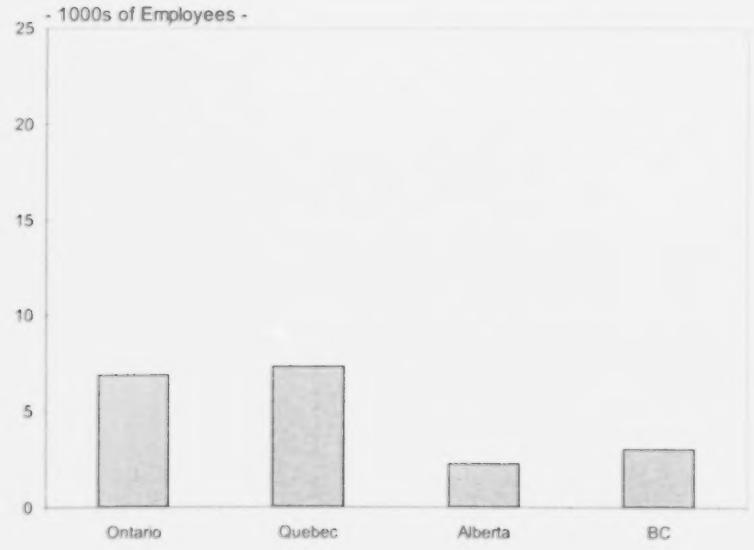
Panel Mills



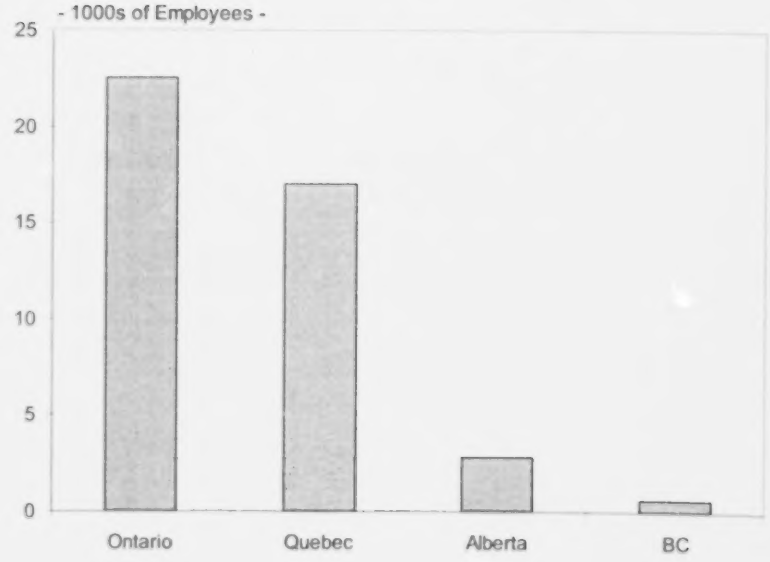
EMPLOYEES

- Canadian Provinces -

Millwork Industries



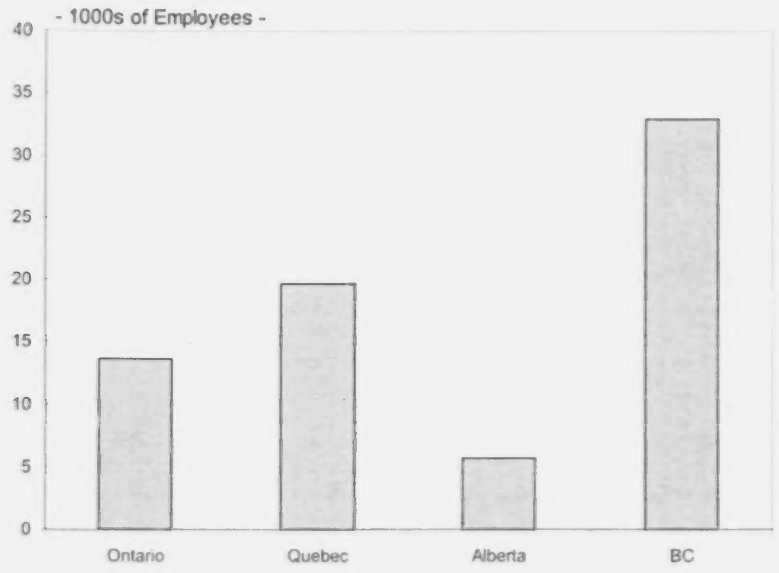
Furniture



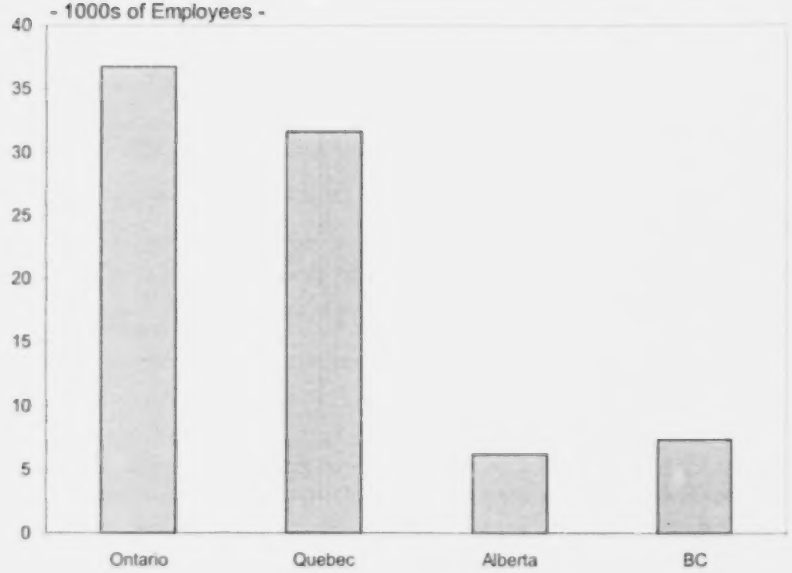
EMPLOYEES

- Canadian Provinces -

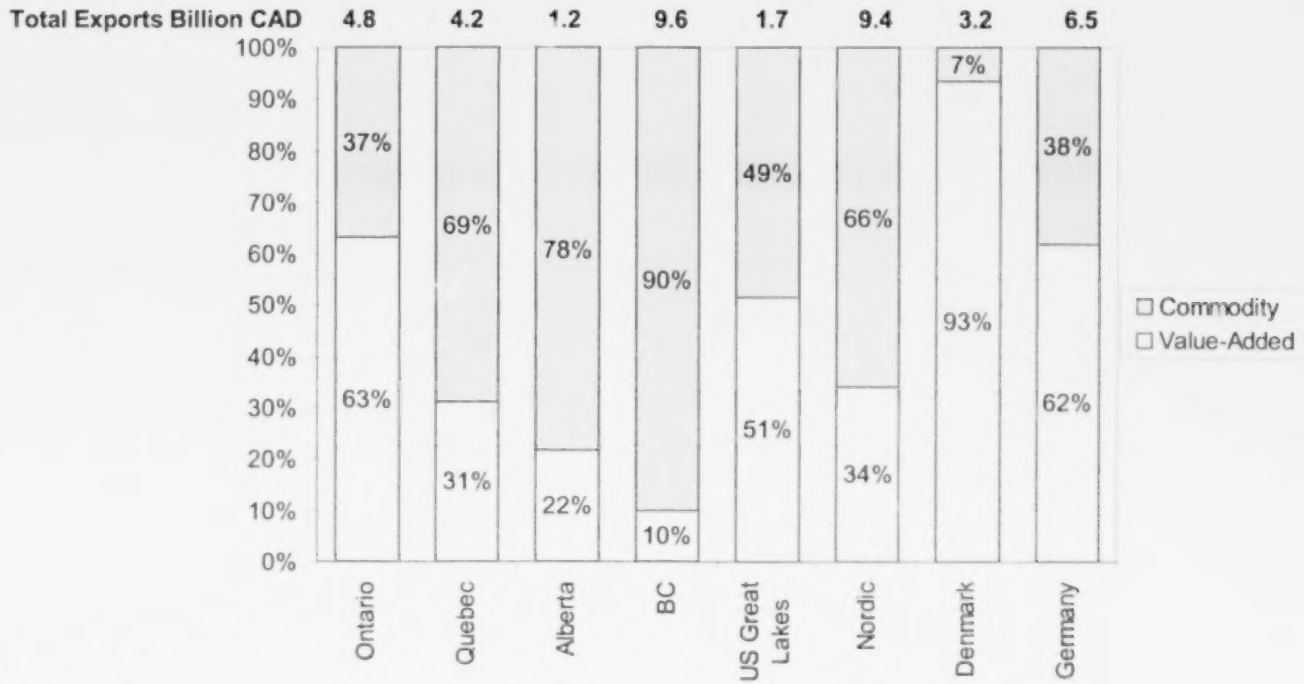
Commodities



Value Added



VALUE ADDED EXPORTS/TOTAL EXPORTS



- Relative to total wood products exports, Ontario's ratio of value added exports to commodity exports is significantly higher than in any other Canadian Province, and is exceeded only by Denmark.

- The low level of value added to total exports in Quebec, Alberta, BC and the Nordic region reflects the dominance of the commodity industries and the relatively limited development of secondary industries in these areas.

VALUE OF EXPORTS

EU NACE in Black CAN SIC in Blue US NAICS in Red

Million CAD				Ontario	AB-BC-PQ	US Great Lakes	Nordic	Denmark	Germany
COMMODITIES				**1,753**	**12,491**	**946**	**6,935**	**259**	**2,470**
dd201	Sawmilling and Planing of Wood, Impregnation			1,119	11,174	639	5,823	129	746
	2512	321113	Sawmills	1,118	11,074				
	2591	321114	Wood Preservation	1	100				
dd202	Manufacture of Veneer, Panels and Boards			634	1,317	308	1,112	130	1,724
	2521	321211	Hardwood Veneer and Plywood	244	225	274	545	34	478
	2522	321212	Softwood Veneer and Plywood	3	357	34	341	25	81
	321219	Reconstituted Wood Product Manufacturing		387	734	120	226	72	1,164
		2592	Particle Board Industry	122	125	110	223	69	1,162
		2593	Wafer Board Industry	264	610	10	3	3	2
VALUE ADDED				**3,015**	**2,539**	**762**	**2,454**	**2,973**	**3,988**
dd203	Manufacture of Builders' Carpentry and Joinery			469	1,174	250	1,223	769	1,548
	2511	321112	Shingle and Shake Mills	1	276	0	0	0	0
	2542	33711	Wood Kitchen Cabinet and Bathroom	206	112	9	103	79	848
	Millwork Industries			262	786	241	1,120	689	700
	2543	321911	Wood Windows and Doors	107	85	54	257	415	157
	2549	Other Millwork Industries		155	702	187	863	274	544
		321213	Engineered Wood (excl. Truss)				139	28	28
		321214	Truss Manufacturing				3	3	6
		321918	Other Millwork (including Flooring)				721	243	509
		321912	Cut Stock,Resawing Lumber,Planing						
dd204	32192	Wood Container and Pallet Manufacturing		69	72	29	59	18	132
	2561	Wooden Box and Pallet Industry		48	30				
	2581	3399953	Coffin and Casket Industry	21	42				
dd2051	2599	321999	Other Wood Products	83	231	97	125	123	296
dd361	Furniture			2,394	1,061	386	1,046	2,063	2,012
	2611, 2612, 2619, 2691, 2649, 2692, 2699								
	337121, 337122, 337127, 337129, 337211, 337212, 337215, 33791								
2541	Prefabricated Wooden Buildings Industry			36	62	118	412	54	35
	321991	Manufactured Home (Mobile Home) Manufacturing							
	321992	Prefabricated Wood Building Manufacturing							

VALUE OF EXPORTS

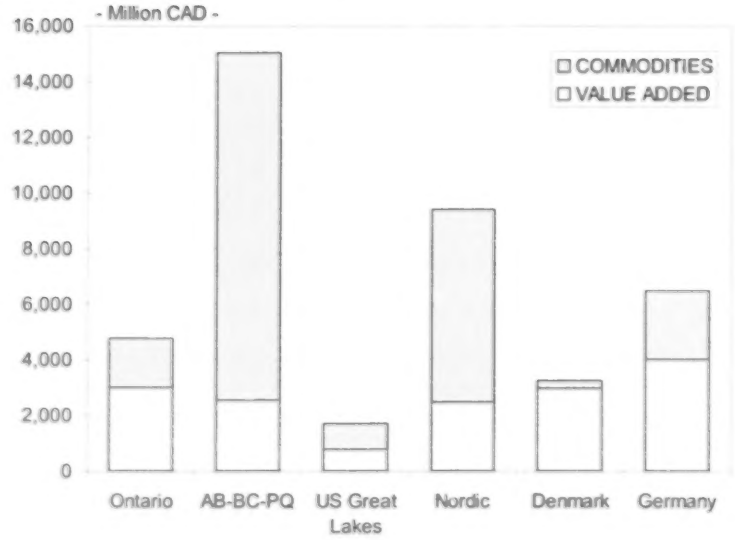
EU NACE in Black CAN SIC in Blue US NAICS in Red

Million CAD				Ontario	Quebec	Alberta	BC
COMMODITIES				**1,753**	**2,928**	**962**	**8,601**
dd201	Sawmilling and Planing of Wood, Impregnation			1,119	2,434	762	7,978
	2512	321113	Sawmills	1,118	2,420	750	7,904
	2591	321114	Wood Preservation	1	14	11	74
dd202	Manufacture of Veneer, Panels and Boards			634	494	200	623
	2521	321211	Hardwood Veneer and Plywood	244	216	1	8
	2522	321212	Softwood Veneer and Plywood	3	11	2	344
	321219		Reconstituted Wood Product Manufacturing	387	267	197	271
		2592	Particle Board Industry	122	95	2	28
		2593	Wafer Board Industry	264	172	195	242
VALUE ADDED				**3,015**	**1,318**	**267**	**954**
dd203	Manufacture of Builders' Carpentry and Joinery			469	337	45	792
	2511	321112	Shingle and Shake Mills	1	34	0	241
	2542	33711	Wood Kitchen Cabinet and Bathroom Millwork Industries	206	89	5	18
	2543	321911	Wood Windows and Doors	262	214	40	533
	2549		Other Millwork Industries	107	53	4	28
		321213	Engineered Wood (excl. Truss)	155	161	35	505
		321214	Truss Manufacturing				
		321918	Other Millwork (including Flooring)				
		321912	Cut Stock,Resawing Lumber,Planing				
dd204	32192		Wood Container and Pallet Manufacturing	69	37	6	30
	2561		Wooden Box and Pallet Industry	48	5	5	21
	2581	3399953	Coffin and Casket Industry	21	32	1	9
dd2051	2599	321999	Other Wood Products	83	181	4	46
dd361	Furniture			2,394	763	212	87
	2611, 2612, 2619, 2691, 2649, 2692, 2699						
	337121, 337122, 337127, 337129, 337211, 337212, 337215, 33791						
2541	Prefabricated Wooden Buildings Industry			36	7	13	42
	321991		Manufactured Home (Mobile Home) Manufacturing				
	321992		Prefabricated Wood Building Manufacturing				

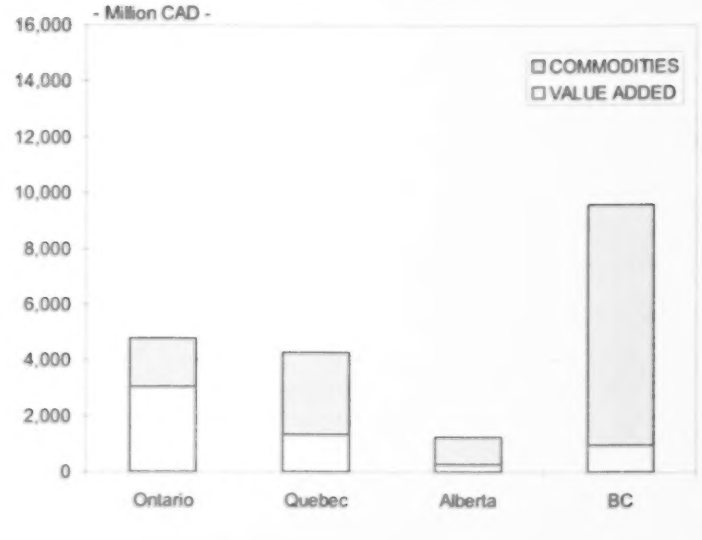
VALUE OF EXPORTS

- Commodity:Value-Added -

Overall



Canadian Provinces



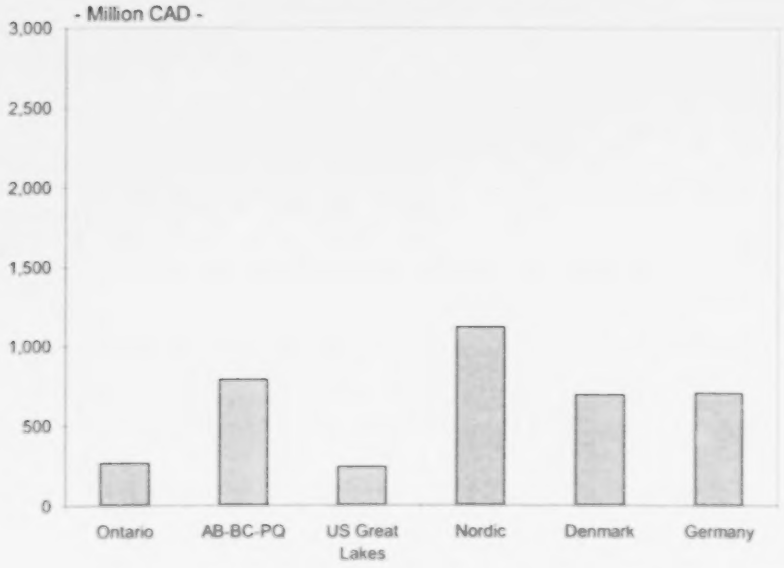
- Ontario's ratio of value added exports to commodity exports is 150%, well above the similar ratio for other Provinces and for the Nordic Region.

- For Germany and the Great Lakes exports represent only 8% and 5% of total sales, reflecting the opportunities within their large domestic markets

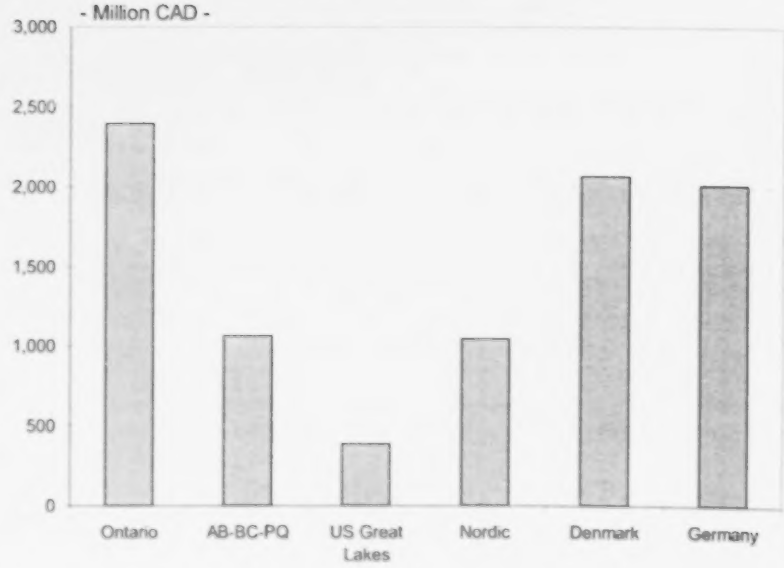
VALUE OF EXPORTS

- Millwork Industries, Furniture -

Millwork Industries



Furniture



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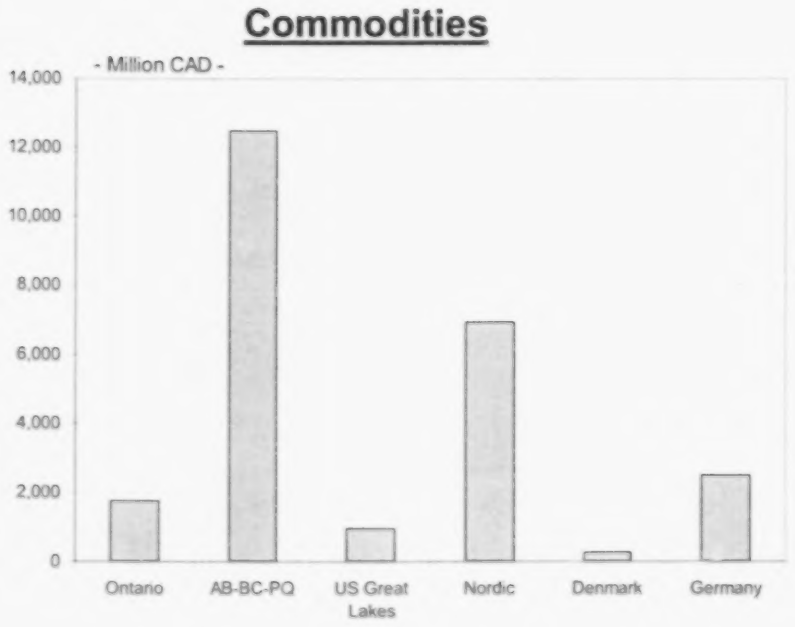
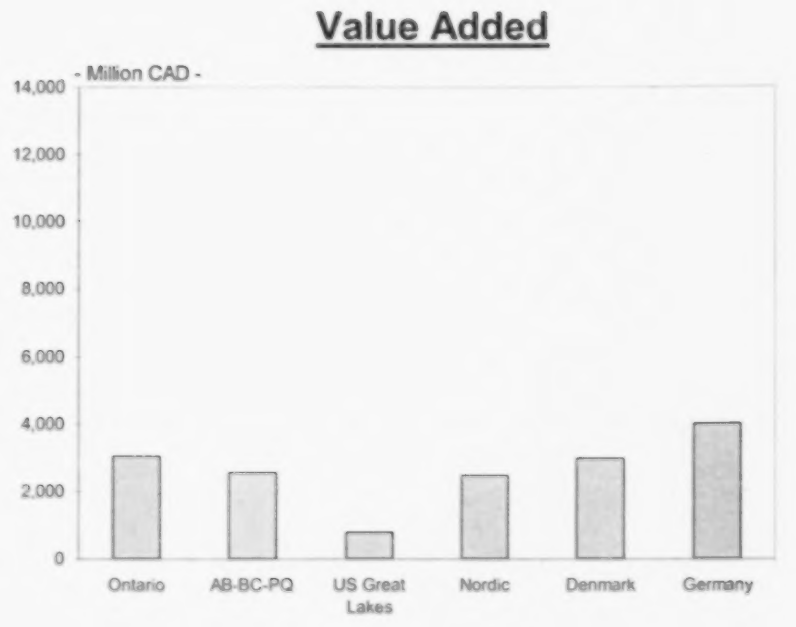
VALUE OF EXPORTS

- Commodities, Value Added -

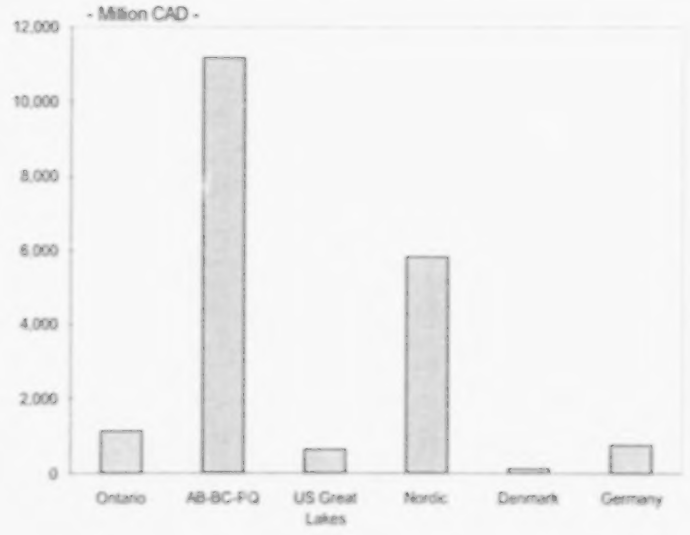




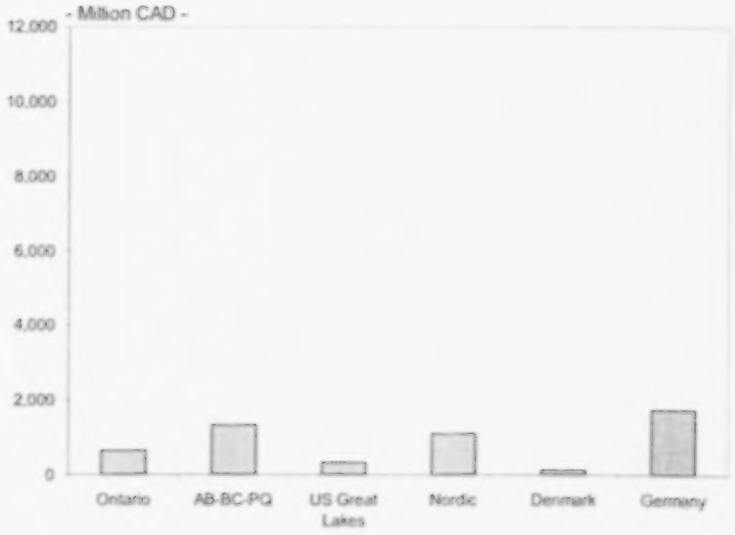
VALUE OF EXPORTS

- Sawmills, Panel Mills -

Sawmills



Panel Mills



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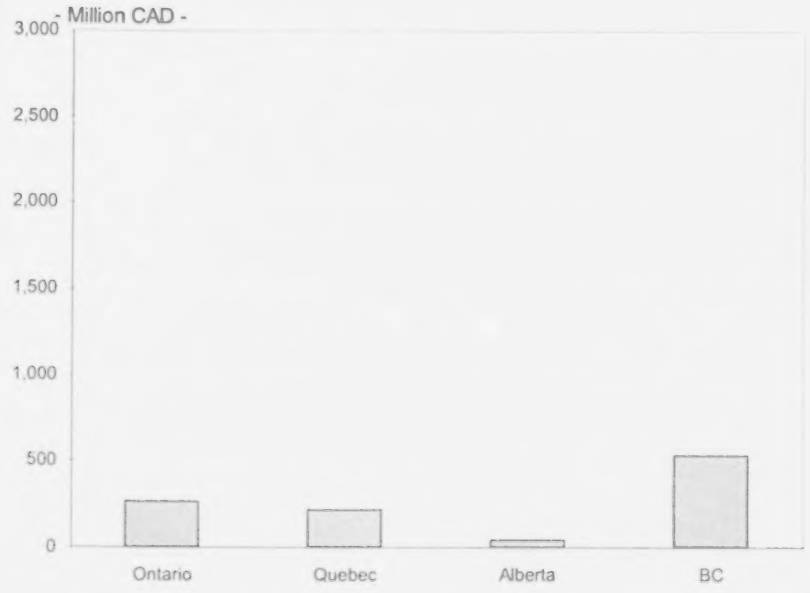
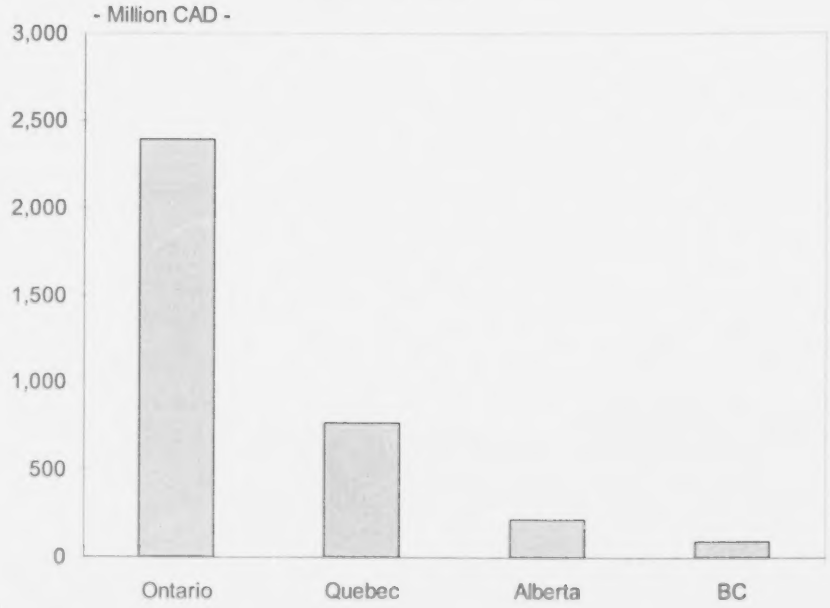
VALUE OF EXPORTS

- Canadian Provinces -

Millwork Industries



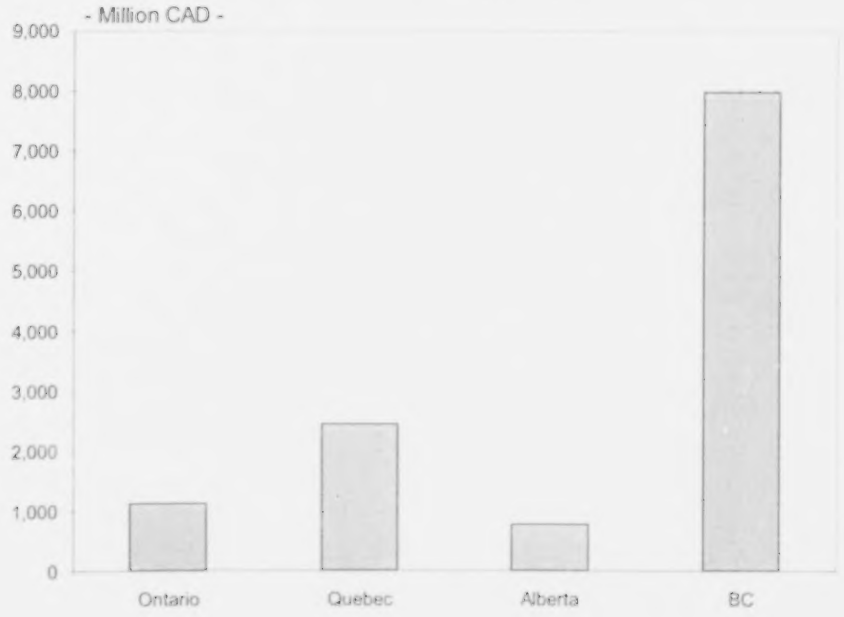
Furniture



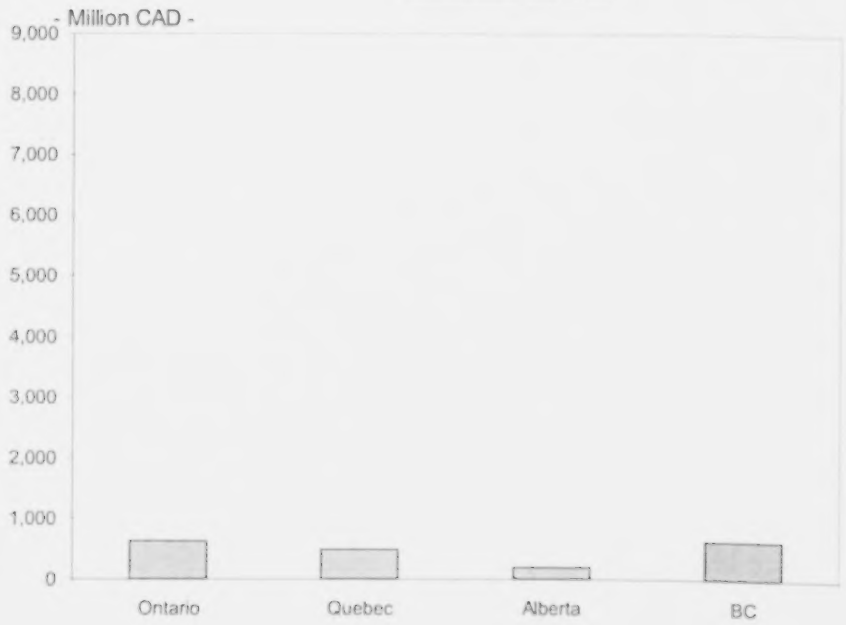
VALUE OF EXPORTS

- Canadian Provinces -

Sawmills



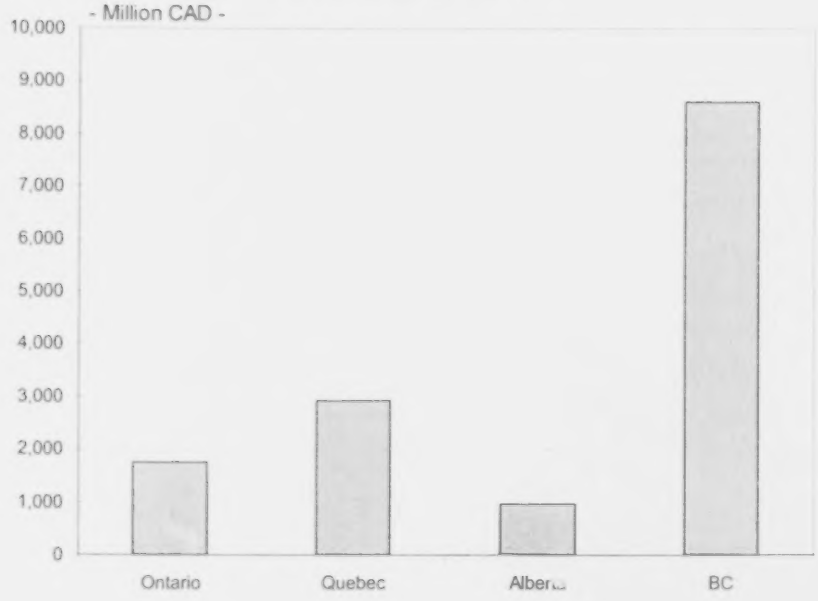
Panel Mills



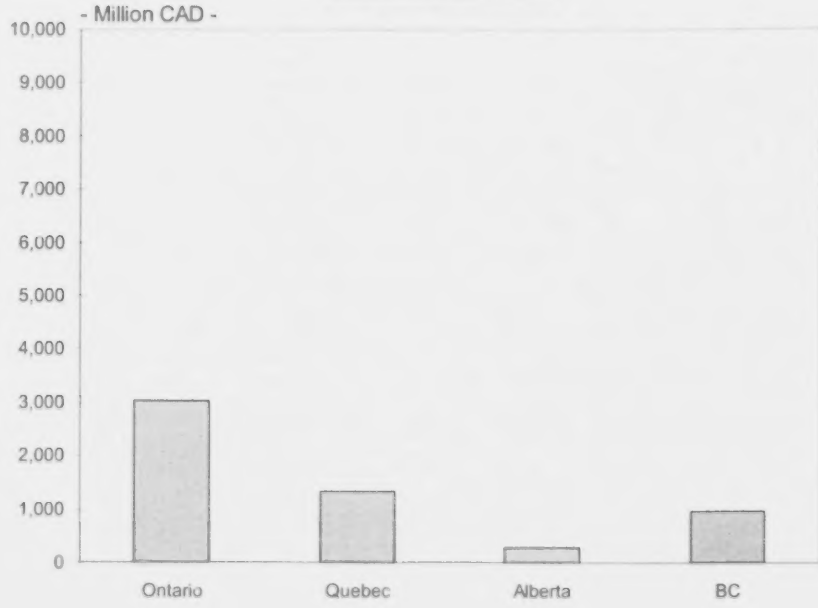
VALUE OF EXPORTS

- Canadian Provinces -

Commodities



Value Added



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SALES/EMPLOYEE

EU NACE in Black CAN SIC in Blue US NAICS in Red

1000 CAD				Ontario	AB-BC-PQ	US Great Lakes	Nordic	Denmark	Germany	Germany w/ small
COMMODITIES				**201**	**284**	**229**	**287**	**198**	**241**	**241**
dd201	Sawmilling and Planing of Wood, Impregnation			200	289	231	335	209	259	259
	2512	321113	Sawmills	194	289	195				
	2591	321114	Wood Preservation	358	305	644				
dd202	Manufacture of Veneer, Panels and Boards			204	250	224	149	187	220	220
	2521	321211	Hardwood Veneer and Plywood	151	147	144	113	122	212	212
	2522	321212	Softwood Veneer and Plywood		248					
	321219		Reconstituted Wood Product Manufacturing	275	259	278	117	193	222	222
		2592	Particle Board Industry	277	235	281	117	193	222	222
		2593	Wafer Board Industry	273	283	277				
VALUE ADDED				**112**	**111**	**159**	**133**	**167**	**175**	**150**
dd203	Manufacture of Builders' Carpentry and Joinery			120	123	175	135	171	196	132
	2511	321112	Shingle and Shake Mills		186					
	2542	33711	Wood Kitchen Cabinet and Bathroom	114	94	150	129	179	213	212
	Millwork Industries			124	129	186	136	169	188	126
	2543	321911	Wood Windows and Doors	140	115	210				
	2549		Other Millwork Industries	114	139	172				
		321213	Engineered Wood (excl. Truss)							
		321214	Truss Manufacturing			173				
		321918	Other Millwork (including Flooring)			123				
		321912	Cut Stock,Resawing Lumber,Planing			211				
dd204	32192		Wood Container and Pallet Manufacturing	122	96	125	129	152	201	122
	2561		Wooden Box and Pallet Industry	122	109					
	2581	3399953	Coffin and Casket Industry		73					
dd2051	2599	321999	Other Wood Products	67	117	127	69	228	22	74
dd361	Furniture			109	100	148	138	161	174	209
	2611, 2612, 2619, 2691, 2649, 2692, 2699									
	337121, 337122, 337127, 337129, 337211, 337212, 337215, 33791									
2541	Prefabricated Wooden Buildings Industry			142	110	222				
	321991		Mobile Home Manufacturing			237				
	321992		Prefabricated Wood Buildings			199				

SALES/EMPLOYEE

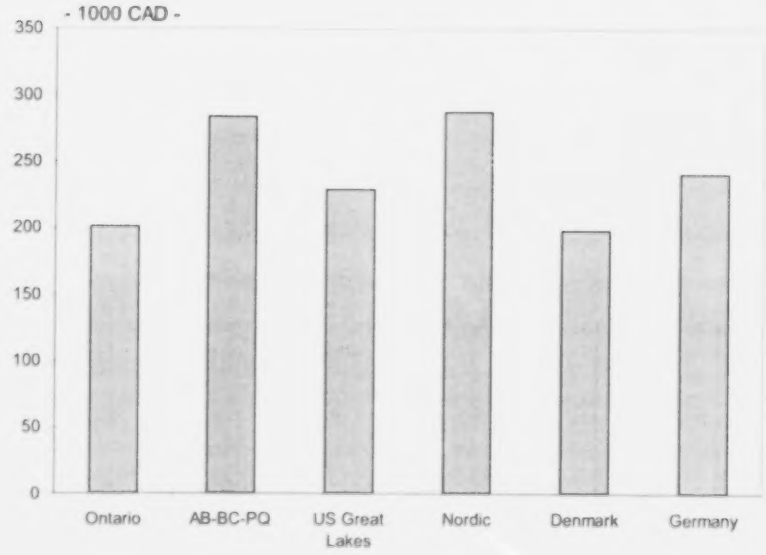
EU NACE in Black CAN SIC in Blue US NAICS in Red

1000 CAD				Ontario	Quebec	Alberta	BC
COMMODITIES				**201**	**231**	**281**	**316**
dd201	Sawmilling and Planing of Wood, Impregnation			200	230	280	328
	2512	321113	Sawmills	194	228	281	328
	2591	321114	Wood Preservation	358	376	233	296
dd202	Manufacture of Veneer, Panels and Boards			204	245	288	243
	2521	321211	Hardwood Veneer and Plywood	151	147		
	2522	321212	Softwood Veneer and Plywood			297	244
	321219	Reconstituted Wood Product Manufacturing		275	256	285	242
		2592	Particle Board Industry	277	239	262	219
		2593	Wafer Board Industry	273	281	291	274
VALUE ADDED				**112**	**104**	**106**	**144**
dd203	Manufacture of Builders' Carpentry and Joinery			120	112	112	149
	2511	321112	Shingle and Shake Mills		90	128	225
	2542	33711	Wood Kitchen Cabinet and Bathroom	114	97	84	93
	Millwork Industries			124	121	121	153
	2543	321911	Wood Windows and Doors	140	110	93	142
	2549	Other Millwork Industries		114	130	135	160
		321213	Engineered Wood (excl. Truss)				
		321214	Truss Manufacturing				
		321918	Other Millwork (including Flooring)				
		321912	Cut Stock,Resawing Lumber,Planing				
dd204	32192	Wood Container and Pallet Manufacturing		122	94	94	131
	2561	Wooden Box and Pallet Industry		122	110	94	131
	2581	3399953	Coffin and Casket Industry		73		
dd2051	2599	321999	Other Wood Products	67	124	81	111
dd361	Furniture			109	99	101	132
	2611, 2612, 2619, 2691, 2649, 2692, 2699						
	337121, 337122, 337127, 337129, 337211, 337212, 337215, 33791						
2541	Prefabricated Wooden Buildings Industry			142	112	78	162
	321991	Mobile Home Manufacturing					
	321992	Prefabricated Wood Buildings					

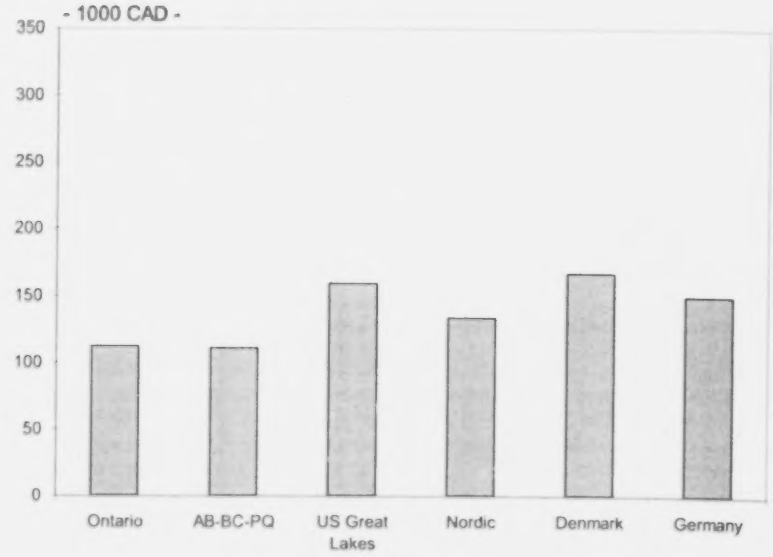
SALES/EMPLOYEE

- Commodities, Value Added -

Commodities



Value Added

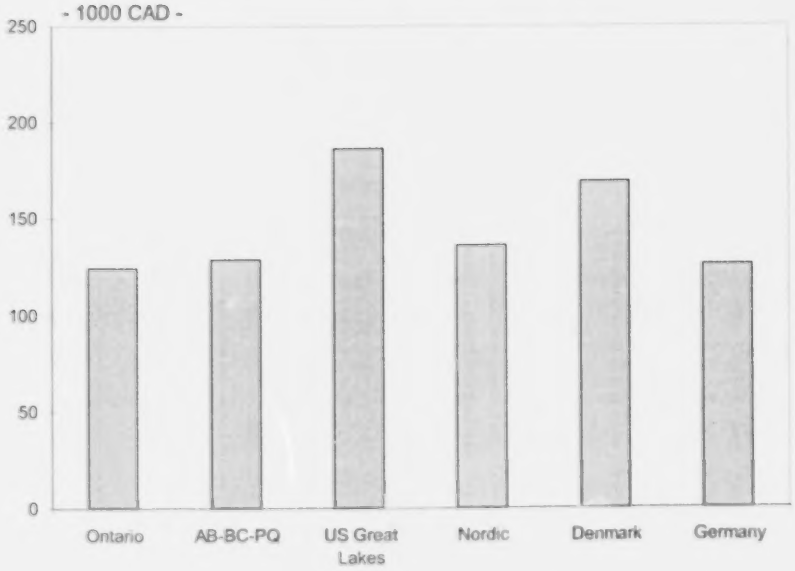


- The higher levels of sales per employee achieved in the commodity industries reflects the larger scale and greater automation common to these types of mills.

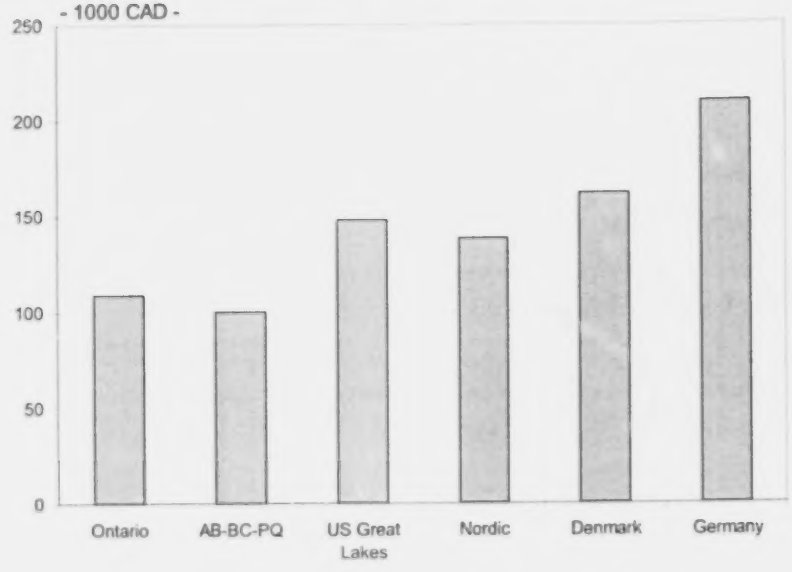
SALES/EMPLOYEE

- Millwork Industries, Furniture -

Millwork Industries



Furniture

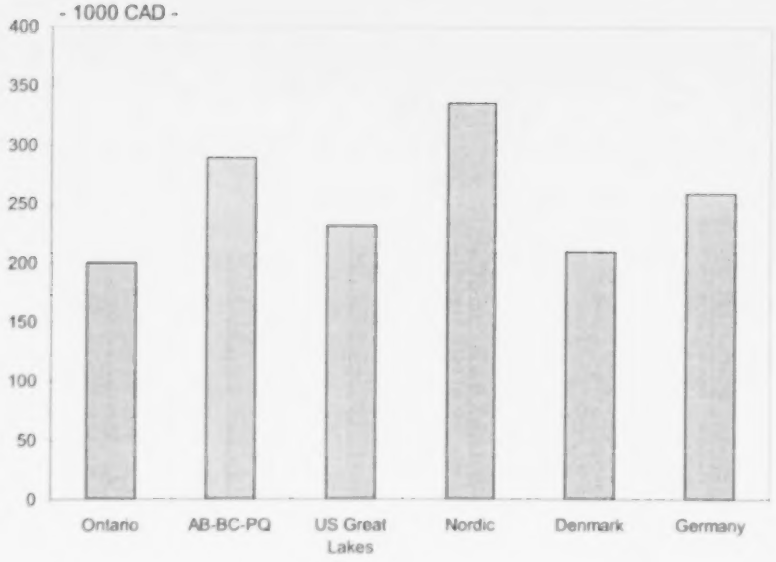


- In areas where labour resources are scarce, (US Great Lakes States), and costly, (Nordic Region, Denmark and Germany), increased use of technology is reflected in increased sales/employee, particularly in the millwork segment.
- Enterprises in Germany's millwork industries, however, are relatively smaller and generate significantly lower value/employee relative to enterprises in the furniture segment.

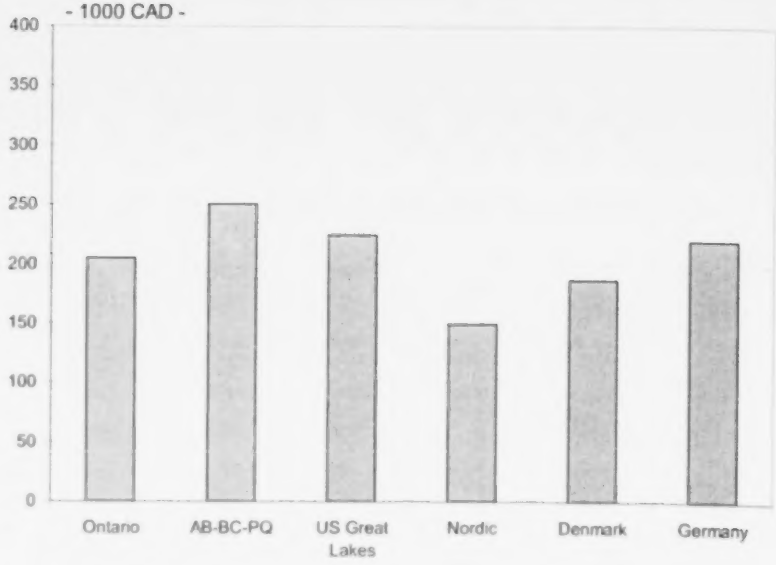
SALES/EMPLOYEE

- Sawmills, Panel Mills -

Sawmills



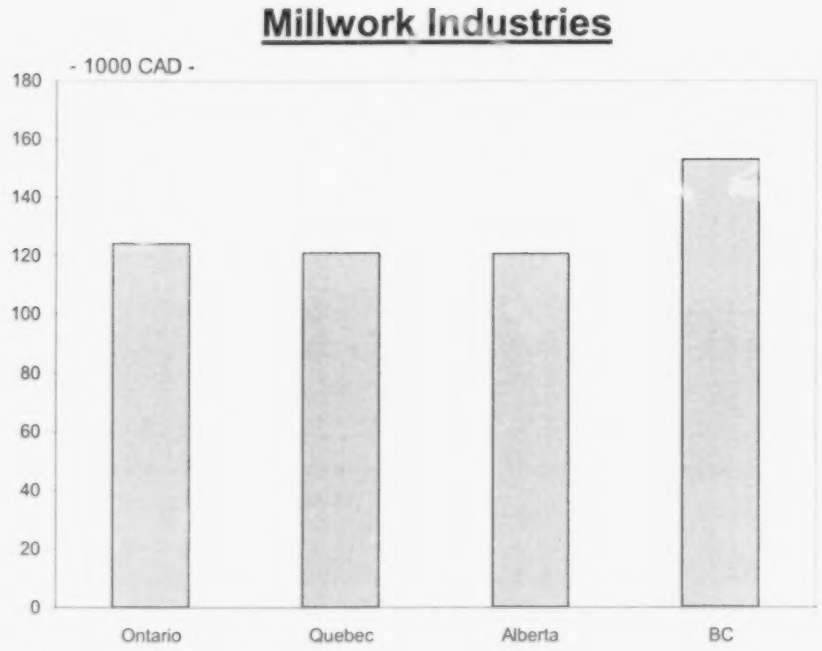
Panel Mills

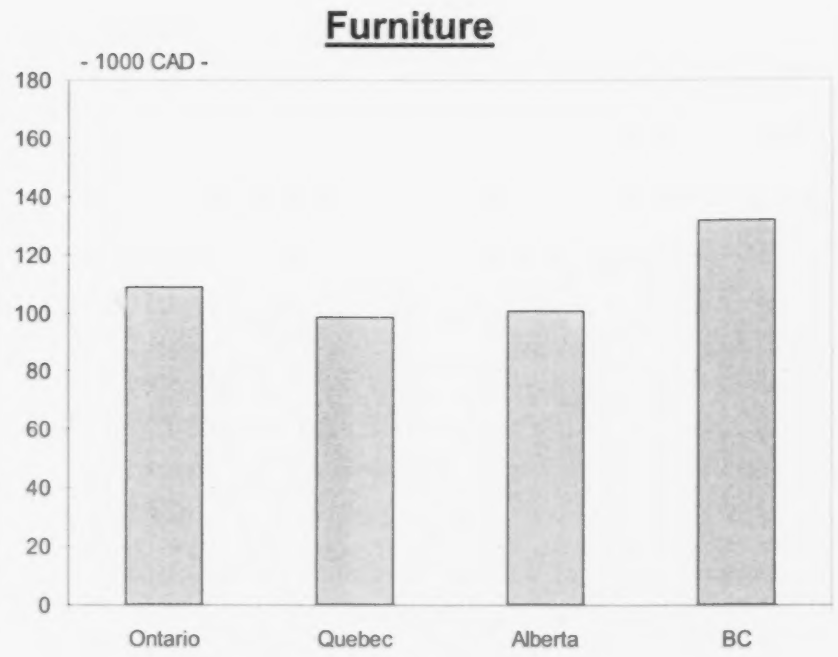


- As illustrated previously commodity industries – sawmills, panel mills – achieve relatively high levels of sales/employee as a result of larger scale and greater automation common to these types of mills. This is especially the case for sawmills in the Canadian Provinces and the Nordic Region, and for the panel mills the Provinces, the US Great Lakes States and in Germany.

SALES/EMPLOYEE

- Canadian Provinces -

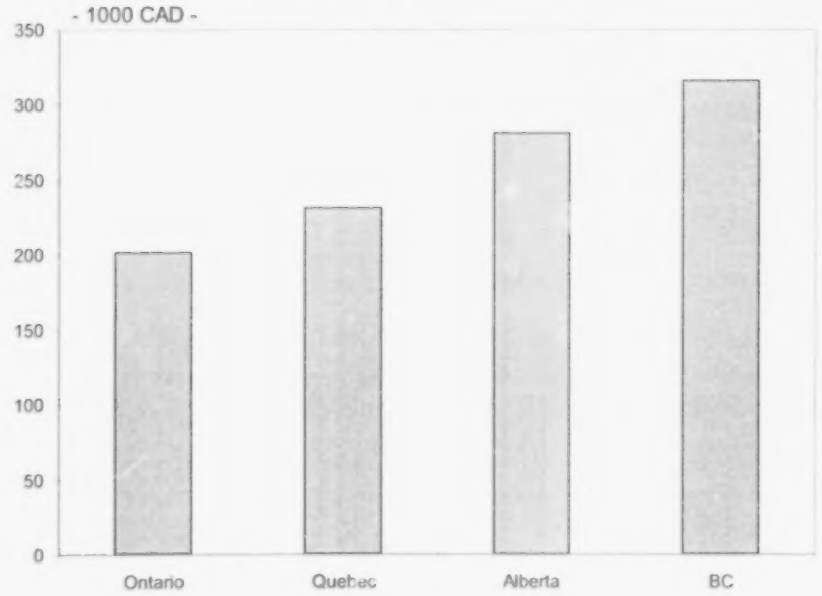




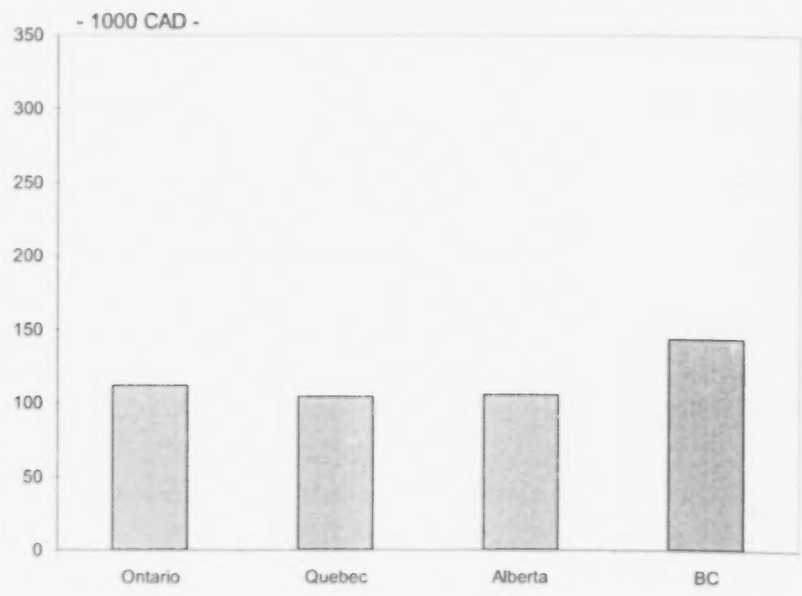
SALES/EMPLOYEE

- Canadian Provinces -

Commodities



Value Added

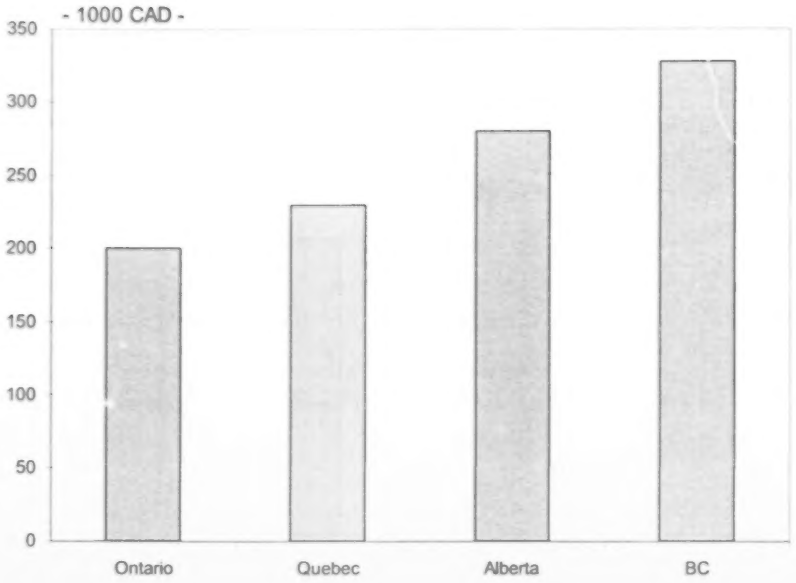


- The higher levels of sales/employee in the commodities industries in each of the other Provinces, (compared to Ontario), reflects the relatively larger scale of mills in those jurisdictions and, especially in Alberta and the Interior of British Columbia, where mills are relatively newer than in Ontario.
- The higher levels of sales/employee in value added in BC reflect the dominance of high volume remanufacturing within overall value added production in that Province.

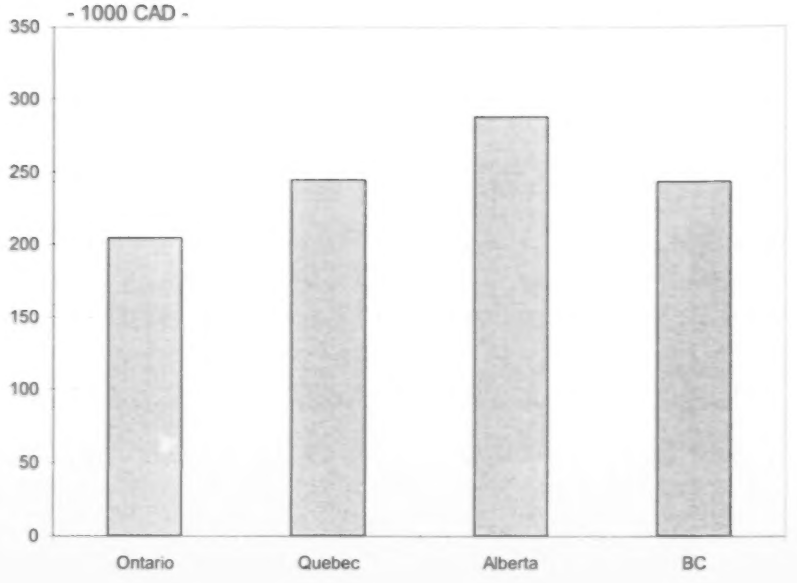
SALES/EMPLOYEE

- Canadian Provinces -

Sawmills



Panel Mills



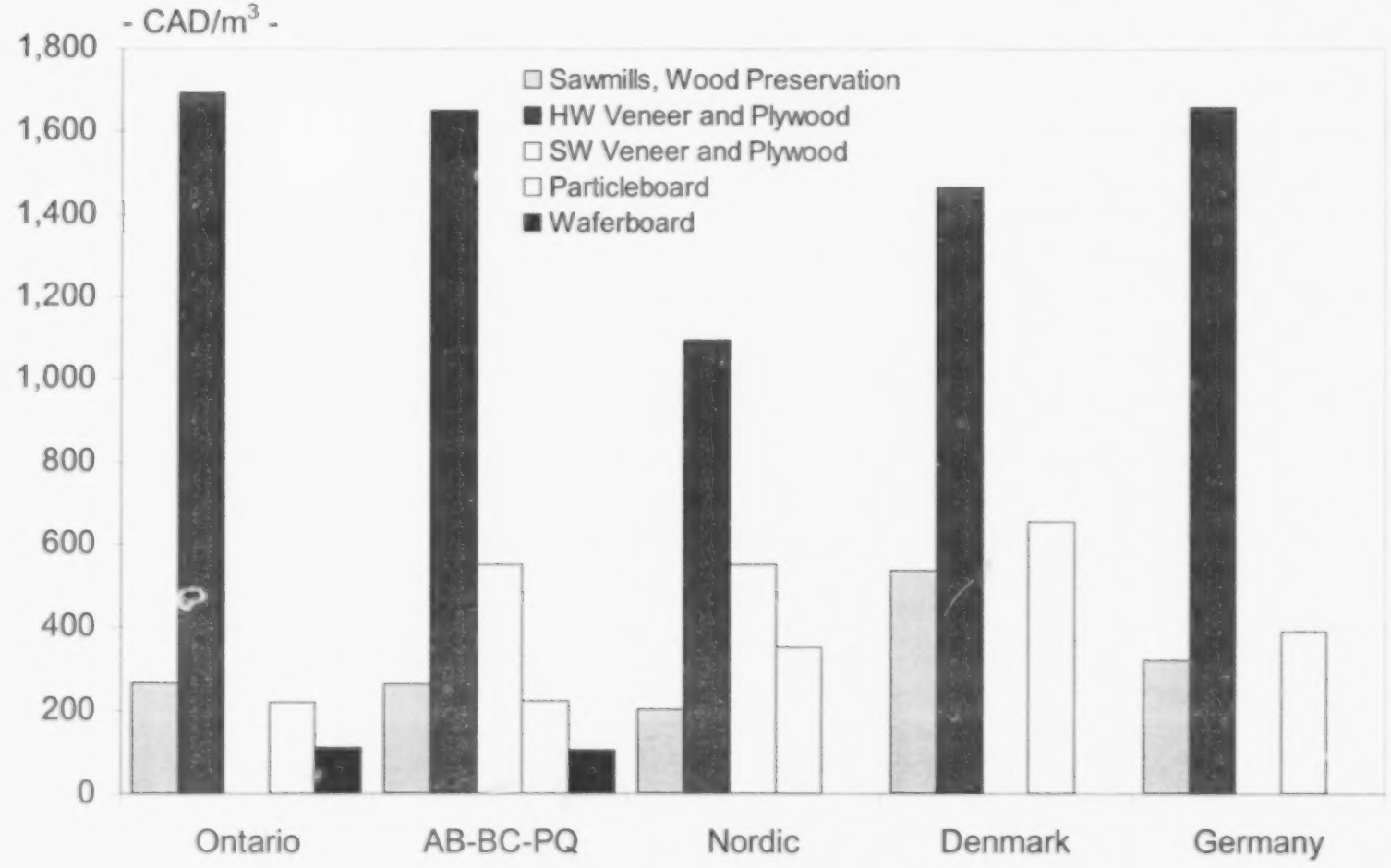
- The relative dominance of newer and larger mills in the other Provinces, (sawmills in Alberta and British Columbia and panel mills in each of the other three Provinces) is again reflected in the higher levels of sales per employee generated in those areas.

SALES/OUTPUT - COMMODITIES

VALUE ADDED/OUTPUT
EU NACE in Black CAN SIC in Blue US NAICS in Red

CAD/Volume Unit				Ontario	AB-BC-PQ	US Great Lakes	Nordic	Denmark	Germany
COMMODITIES (m^3)				**259**	**259**		**221**	**594**	**366**
dd201	Sawmilling and Planing of Wood, Impregnation (m^3)			264	264		201	537	320
	2512	321113	Sawmills (m^3)	266	264				
	2591	321114	Wood Preservation (m^3)	237	228				
dd202	Manufacture of Veneer, Panels and Boards (m^3)			250	228		577	675	458
	2521	321211	Hardwood Veneer and Plywood (m^3)	1,694	1,650		1,094	1,465	1,659
	2522	321212	Softwood Veneer and Plywood (m^3)		551		551		
	321219	Reconstituted Wood Product Manufacturing (m^3)		154	138		351	654	390
		2592	Particle Board Industry (m^3)	219	222		351	654	390
		2593	Wafer Board Industry (m^3)	108	105				

SALES/OUTPUT



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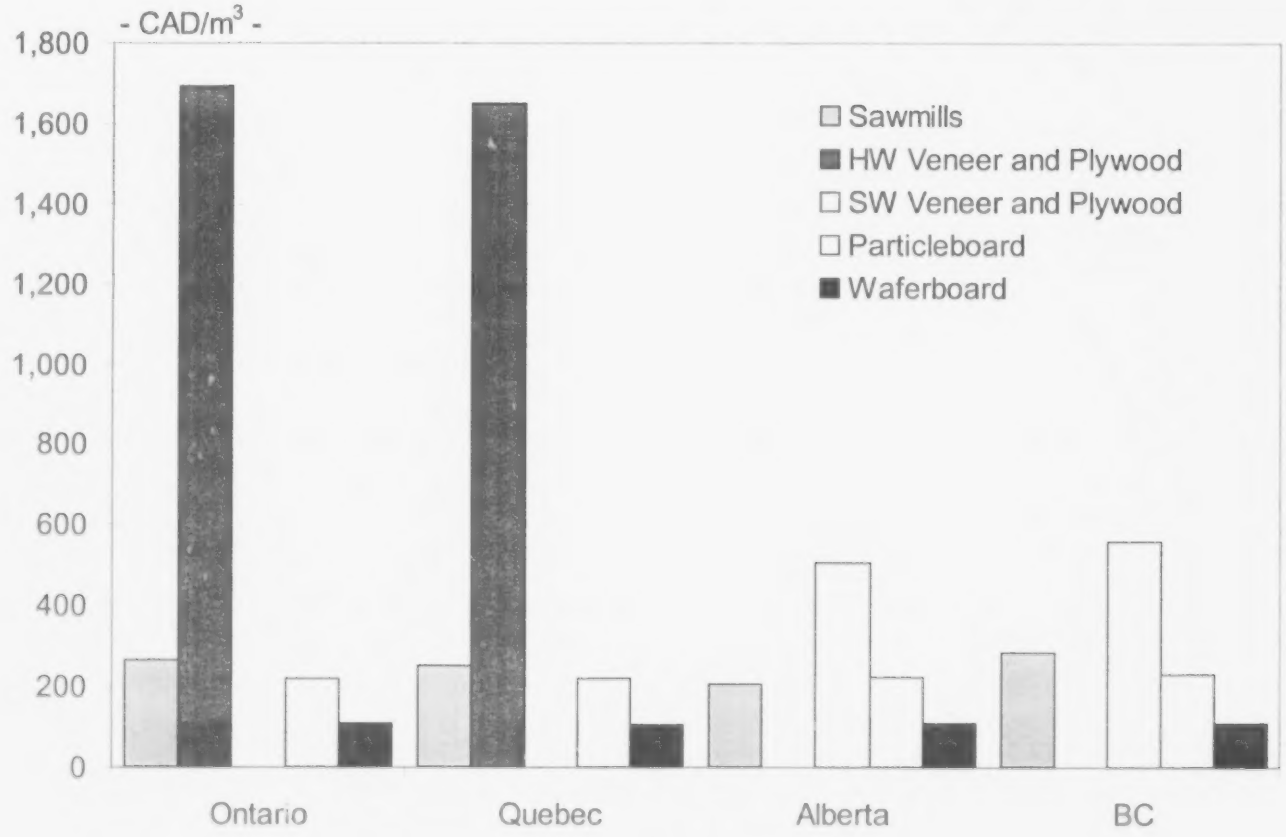
Jaakko Pöyry Consulting

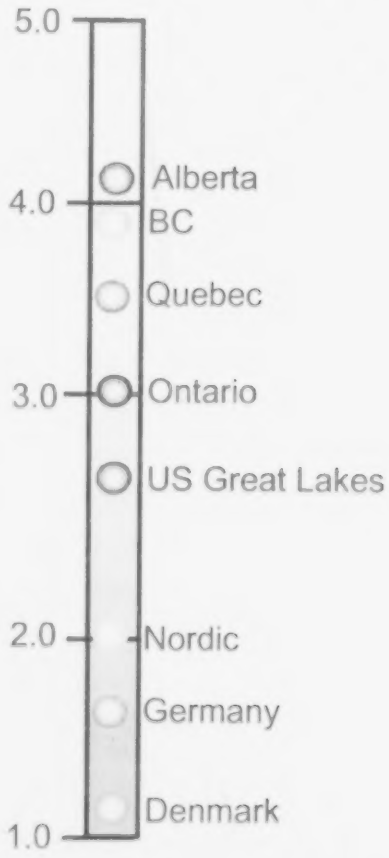
SALES/OUTPUT – COMMODITIES
Canadian Provinces

CAD/Volume Unit				Ontario	Quebec	Alberta	BC
COMMODITIES (m^3)				**259**	**235**	**191**	**288**
dd201	Sawmilling and Planing of Wood, Impregnation (m^3)			264	252	206	281
	2512	321113	Sawmills (m^3)	266	252	206	281
	2591	321114	Wood Preservation (m^3)	237	245	205	226
dd202	Manufacture of Veneer, Panels and Boards (m^3)			250	155	149	358
	2521	321211	Hardwood Veneer and Plywood (m^3)	1,694	1,650		
	2522	321212	Softwood Veneer and Plywood (m^3)			503	556
	321219	Reconstituted Wood Product Manufacturing (m^3)		154	146	117	149
		2592	Particle Board Industry (m^3)	219	219	221	229
		2593	Wafer Board Industry (m^3)	108	103	106	106

SALES/OUTPUT



OVERALL POSITION OF THE BENCHMARK REGIONS BY THE QUANTITATIVE PERFORMANCE

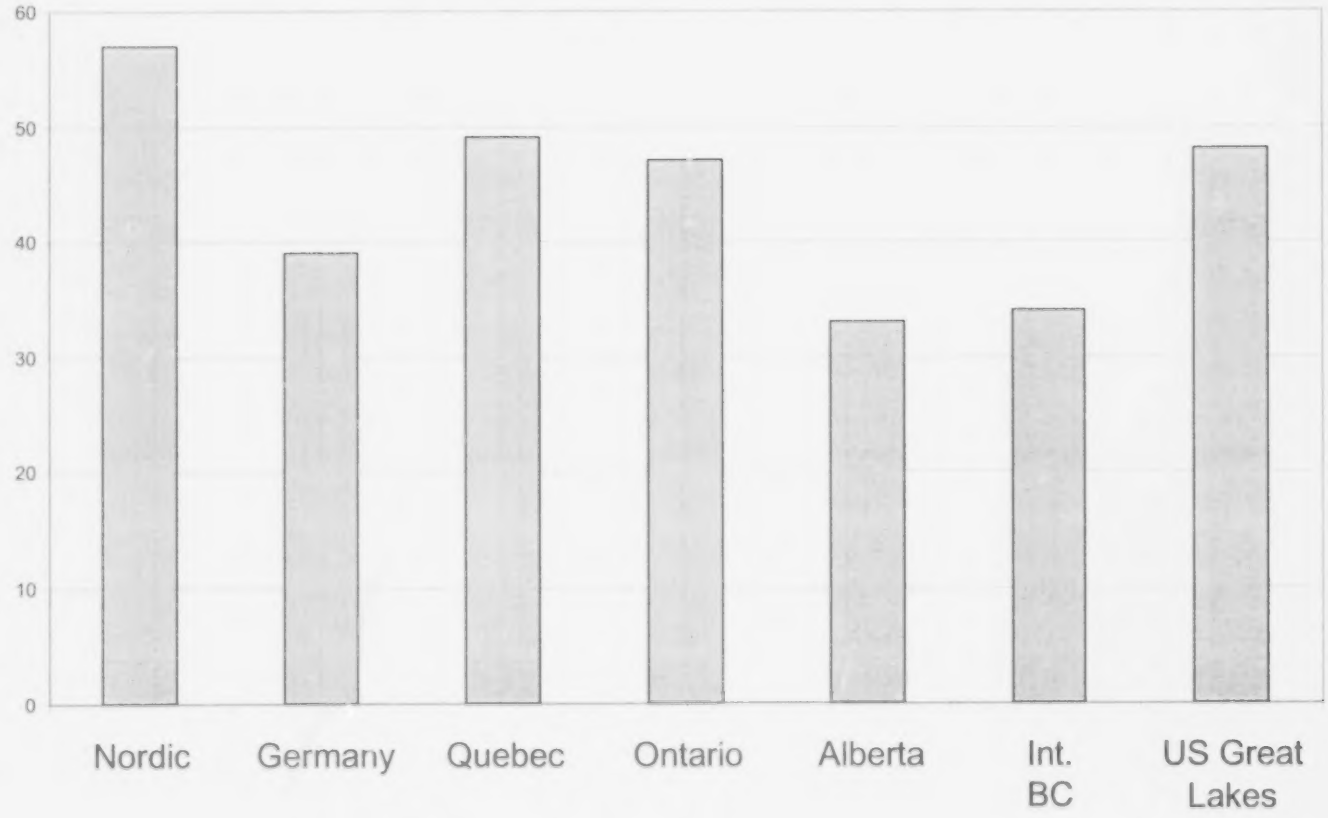


- The North American sectors have a significantly better position in quantitative performance, with lower labour and energy costs and with equivalent productivity measures.

- Superior quantitative positioning offers opportunities in the the intermediate processing segments as well as offsetting the necessity for large capital expenditures to offset a poor positioning.

Cost of Softwood Chips

CAD/M^3



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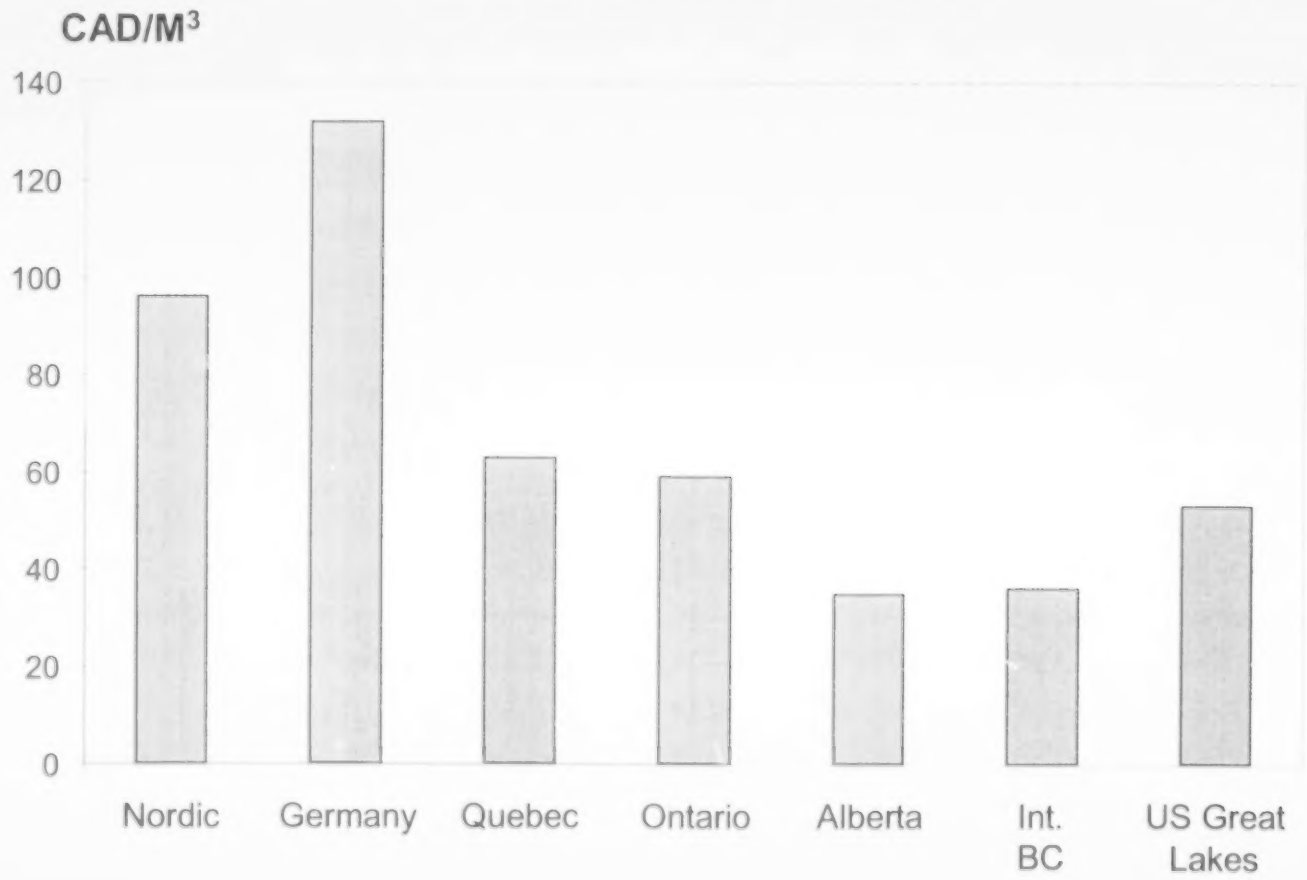
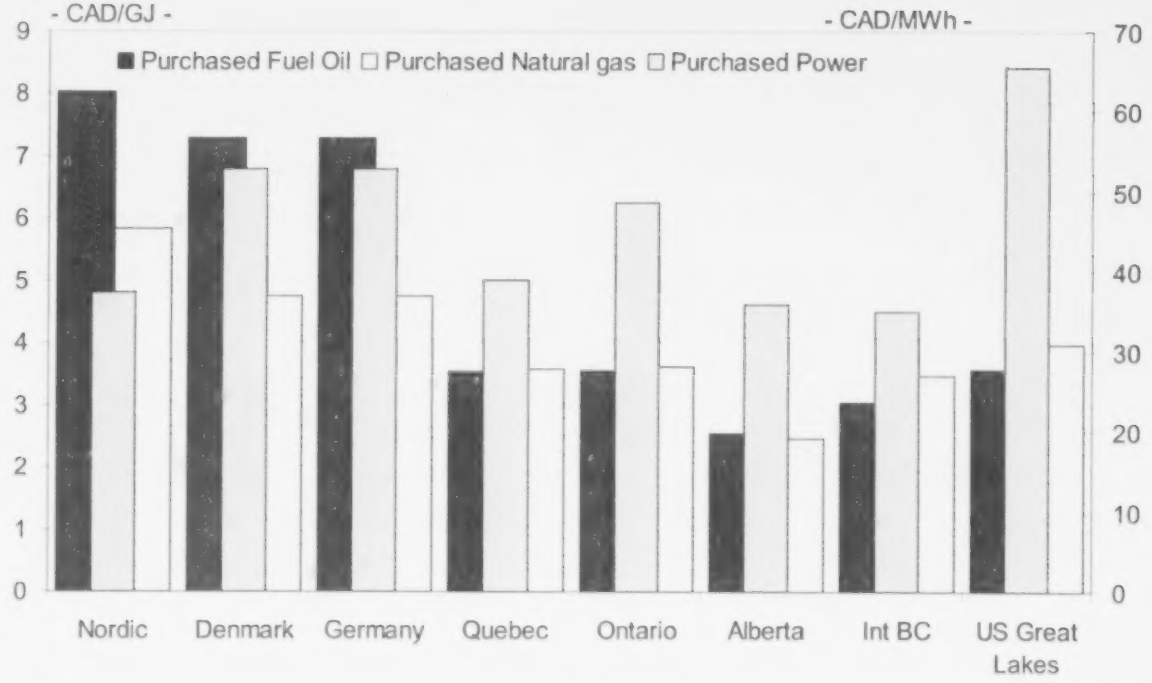
Jaakko Pöyry Consulting

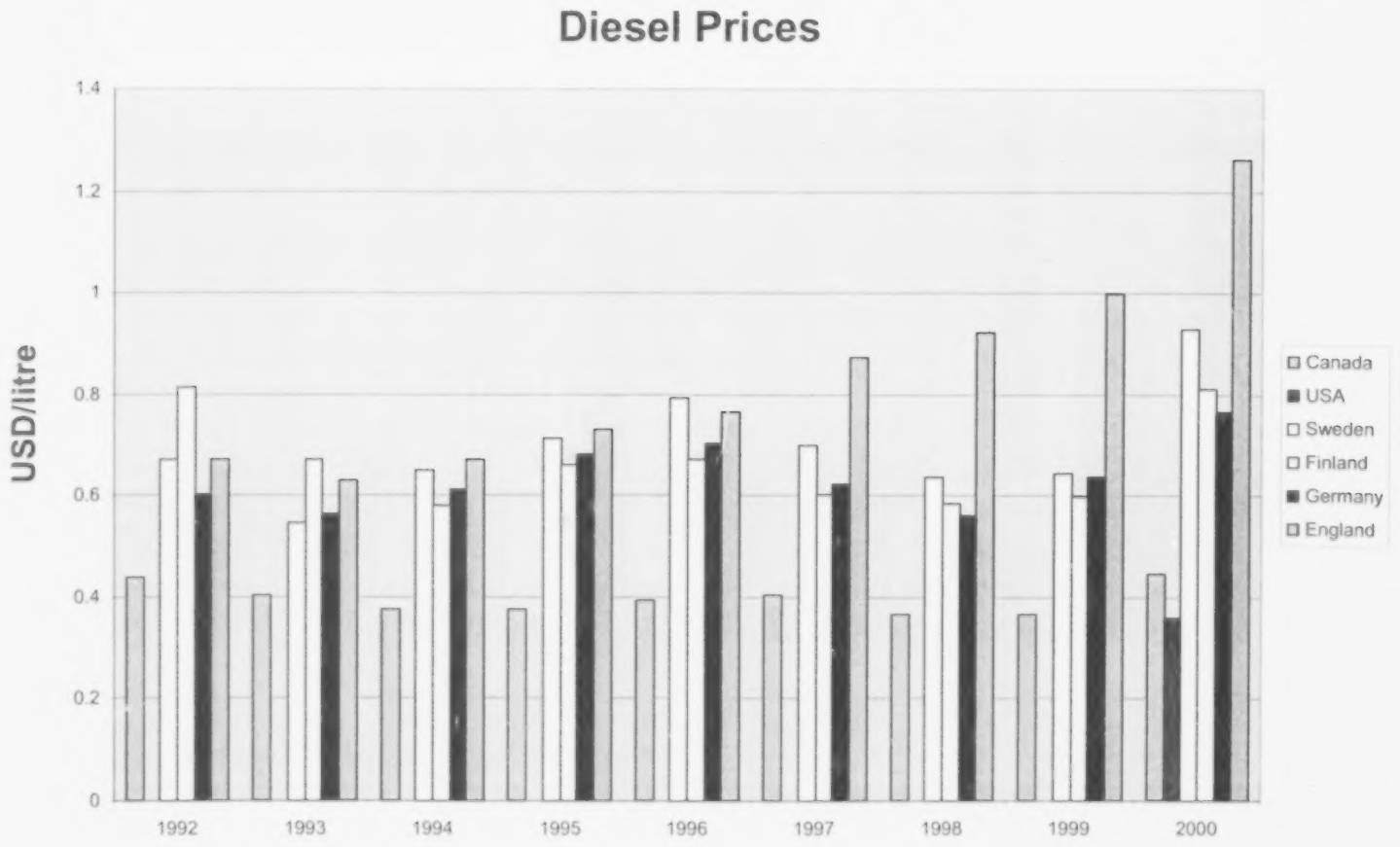
Cost of Softwood Sawlogs



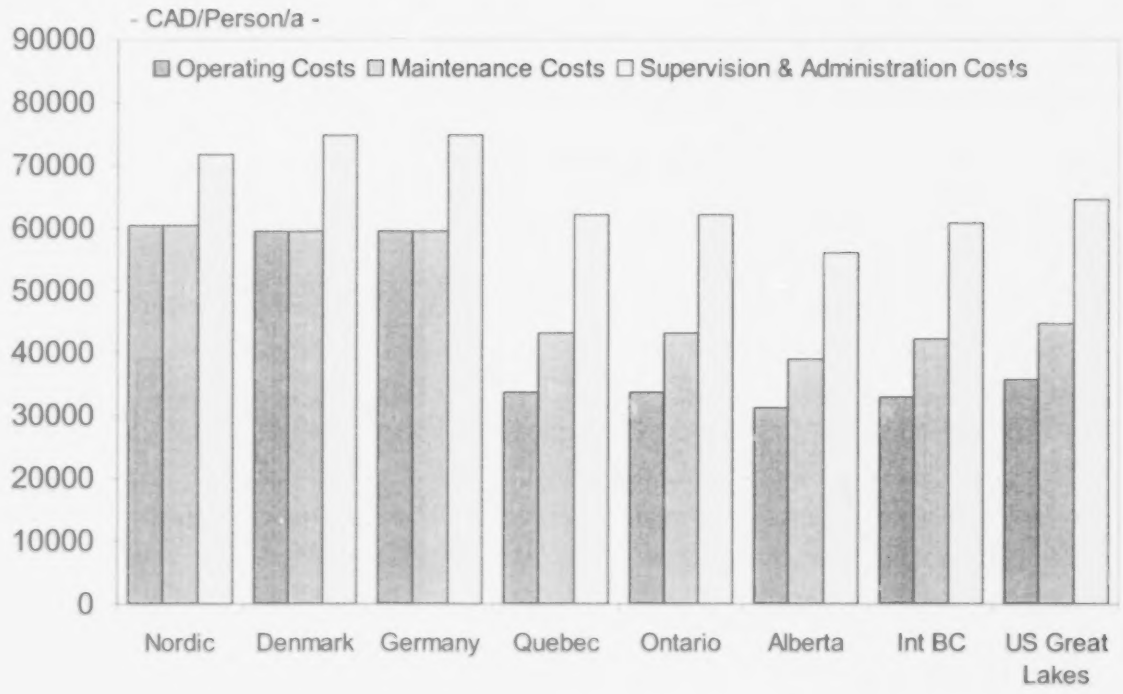
ENERGY COSTS



- Purchased power costs were used as the benchmark as value added relies heavily on electric power to run its machinery.
- Ontario fares poorly against the other Canadian provinces but better than the US Great Lakes.


Diesel Prices
USD/litre
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1992
1993
1994
1995
1996
1997
1998
1999
2000
Canada
USA
Sweden
Finland
Germany
England

PERSONNEL COSTS



SECTION 5

FINDINGS -- QUALITATIVE BENCHMARKING

DEFINITIONS – QUALITATIVE BENCHMARK FACTORS

Management Capability

This factor addresses the education, skill level and management sophistication of executives/owners in each benchmark area, as evidenced both by achievement of advanced management education and ability to develop the functional competences (eg. marketing, finance, operations, logistics, IT, HR, etc.) needed to be competitive in a specific industry or market segment.

It is of critical importance because perhaps more than any other qualitative dimension, management capability is a key determinant of the ability of both individual enterprises and an industry to adapt to and take advantage of opportunities that emerge in changing markets, business and technological environments.

DEFINITIONS – QUALITATIVE BENCHMARK FACTORS

Skill Level

This factor addresses the skills, experience, technical knowledge and expertise of the industry/segment workforce, as well as the ready availability of skilled support trades and professionals, (eg. machining, layout, maintenance, computer skills). This dimension is an important determinant of flexibility and adaptability within industries, especially as they adapt to rapidly changing environments.

Clustering

This factor addresses the flow of synergies between the manufacturers and their raw material and component suppliers, equipment manufacturers, customers and supporting institutions to foster the development of a secondary **WOOD PRODUCTS CULTURE.** A successful **CLUSTER** intensifies the use of knowledge and constructive interaction between different parties and, in many ways, enables the individual enterprises which constitute the cluster to overcome such other disadvantages as distance from raw materials, high input costs, and distance from markets.

DEFINITIONS – QUALITATIVE BENCHMARK FACTORS

Policy Environment

This factor refers to availability/offering of government policies and programs that enhance the framework conditions for business enterprises. It includes organization/facilitation/delivery of education and technological infrastructure that can act as a catalyst for R & D and overall performance improvement. It also involves commitment to developing educational facilities that ensure the availability and continuing improvement of technical and managerial capabilities, promotes R&D, aids industry through network development and supports access to and development of export markets.

A positive policy environment can be a very important complement to an effective cluster and can also be used to enhance strategic competitive advantages and offset strategic competitive weaknesses in an individual jurisdiction, relative to other jurisdictions.

Industry & Market Structure & Accessibility

This factor refers to the extent to which demand (both domestic and export) for secondary wood products is enhanced or constrained by the level of consolidation or other relationships that exist within the value chain of suppliers, producers and markets, including, for example, relationships between primary and secondary producers. It also encompasses the extent to which this dimension enhances or constrains the overall competitiveness of secondary wood products manufacturers in a specific jurisdiction.

DEFINITIONS – QUALITATIVE BENCHMARK FACTORS

Technology

This factor refers to the availability and effective adoption/implementation of new technology by manufacturers of each product type/mix. (This definition also addresses the relationship between secondary producers and machinery suppliers who work with manufacturers to provide appropriate technology designed to improve competitiveness.) Its importance increases over time as a benchmark indicator of the relative performance capability of manufacturers in individual jurisdictions as failure to keep pace with technological advances can be expected to lead to declining market position and import displacement for products from that specific area.

Raw Material

This factor considers the impact on the competitiveness of manufacturers in the benchmark area of access to plentiful, appropriate and competitively priced raw material. (Another aspect of this dimension is whether primary manufacturers/raw material suppliers strive to satisfy secondary manufacturers specifications, and whether that relationship serves to constrain or enhance the competitiveness of the secondary producers.)

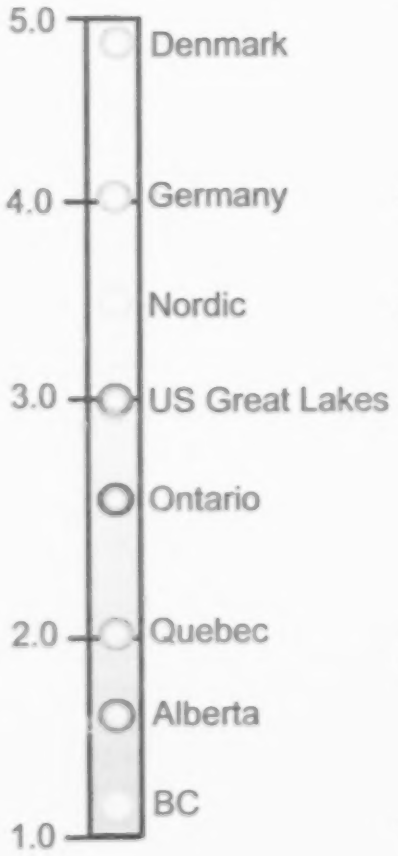
METHOD - RANKING AND WEIGHT FACTORS

Readers should note this evaluation framework is qualitative. The scores and rankings applied to each jurisdiction are primarily relative and derived from qualitative analysis of the analytical dimensions described previously. These rankings should be seen as directionally indicative only, and should not be interpreted as precise measurements.

	Weak 1 2 Medium 3 4 Strong 5	Weight Factor
Management Capability		20
Skill Level		17
Clustering		15
Policy		15
Industry & Market Structure		13
Technology		10
Raw Materials		10
		100

- Rankings were determined by identifying the strongest and the weakest performing sectors and positioning the others in relation to them.
- The weight factors were determined through interviews and the relative effect that each factor would have on overall performance.
- By combining the ranking and the weight factor we arrived at a qualitative score for each region for each dimension.

MANAGEMENT CAPABILITY



- The German and Danish organizations have long recognized secondary manufacturing as a sophisticated business and employ business school graduates to run their businesses.
- Nordic countries, with heavy emphasis on higher education, are employing more and more business school graduates,
- In US States, trend evident towards more professionally educated management, even in private/family held businesses. (eg. New generation of management.) Also, number of secondary producers have become successful, national/international businesses, (eg. Andersen Windows), fostering awareness of value of professional management education.
- Similar trend towards more professionally trained management evident in both Ontario and Québec, though does not appear to be as strong as in US States.
- Western Provinces appear to rely more on technical expertise of owner managers.

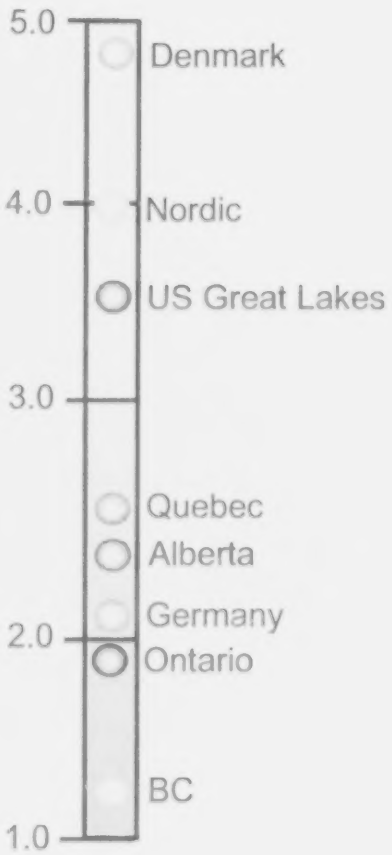
WORKERS SKILL LEVEL

- Through long standing apprenticeship programs and heavy emphasis on trades training the Europeans have obtained a very high level of skilled worker.
- The US Great Lakes has access to large numbers of skilled workers employed in manufacturing industries; however, manufacturers are facing labour shortages in some areas, which is driving investment in more advanced technology.
- Central Canada is attracting more skilled workers as the secondary products manufacturing grows and competes with the other manufacturing industries in the area.
- Western Canada with most emphasis on trades training for the primary has left the secondary producers to train for the needed skills, on the job.

CLUSTERING

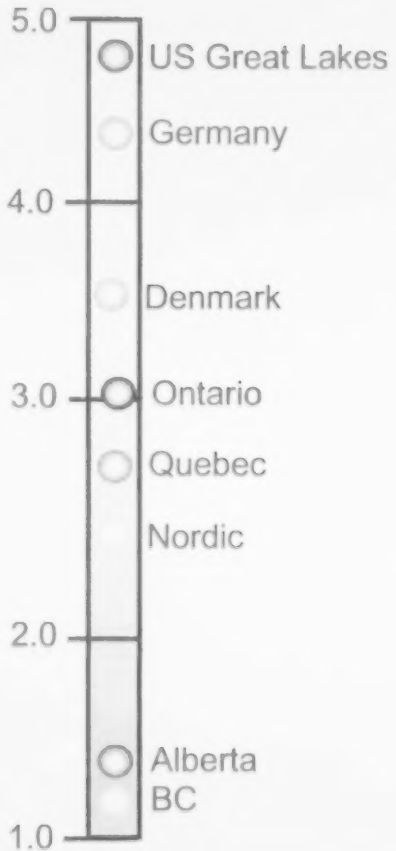
- The European organizations have focused on the benefits of clustering to the point where suppliers and markets search them out
- The clusters in the Nordic countries are heavily supported by government efforts to gain synergies
- Clusters in US States historically developed from resource availability. More recently have been fostered by industry/government/ education cooperation to foster growth/value, (eg. PA Hardwoods Council).
- Canadian initiatives more frequently focused on development of geographic diversification of growth — equality of minimal benefits to many communities — though market-driven clusters have developed in Ontario and, to a lesser degree in Québec.

POLICY ENVIRONMENT



- With furniture being the second largest export sector after pork, the Danish government focuses its efforts in this area
- The Nordic governments have been the most focused on developing a secondary wood products policy around business improvement and clustering.
- Several of the US States, (eg, MI, IN, PA), actively promote wood products industries through participation in industry/government/education organizations, by publishing industry directories on government web sites. All states actively provide financial support programs.
- Québec actively supports technical development of secondary wood industries through research institutions, (eg. CRIQ).
- Secondary wood products industries are not excluded from general business incentive programs offered in other Canadian jurisdictions.

INDUSTRY AND MARKET STRUCTURE



- The market structures in the highly industrialized areas of Europe and Eastern North America offer stronger demand and the level of consolidation in the industries has progressed much further in these areas than in the less populated areas.

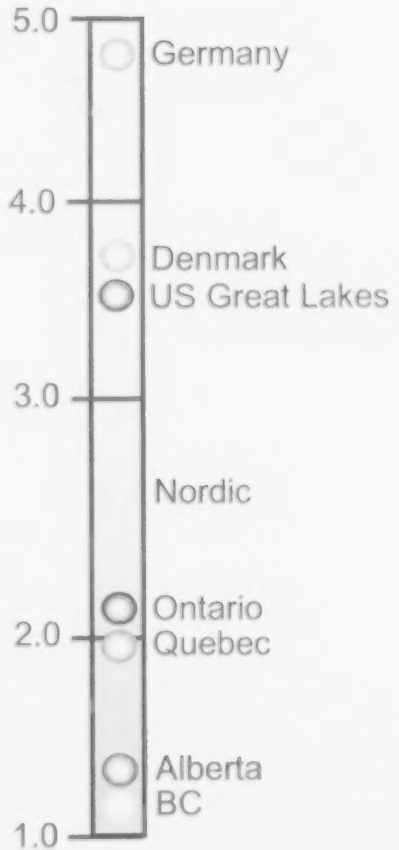
  Examples include IKEA in Europe, Kitchen Craft and Masco in the US, and Premdor in Canada.

- These trends are not as evident in the Nordic countries, Alberta and British Columbia, all of which suffer from limited local/regional demand and distance from markets.

TECHNOLOGY

- High wage levels and the increasing need for productivity along with the proximity of machinery suppliers has put the European benchmark areas ahead of the rest in technological developments.
- Definite trend towards increased use of CNC machines and other more automated manufacturing technologies in many US States; however, primary driver may be tight labour supplies.
- Western Canada lags behind the technological development without the development of more sophisticated segments

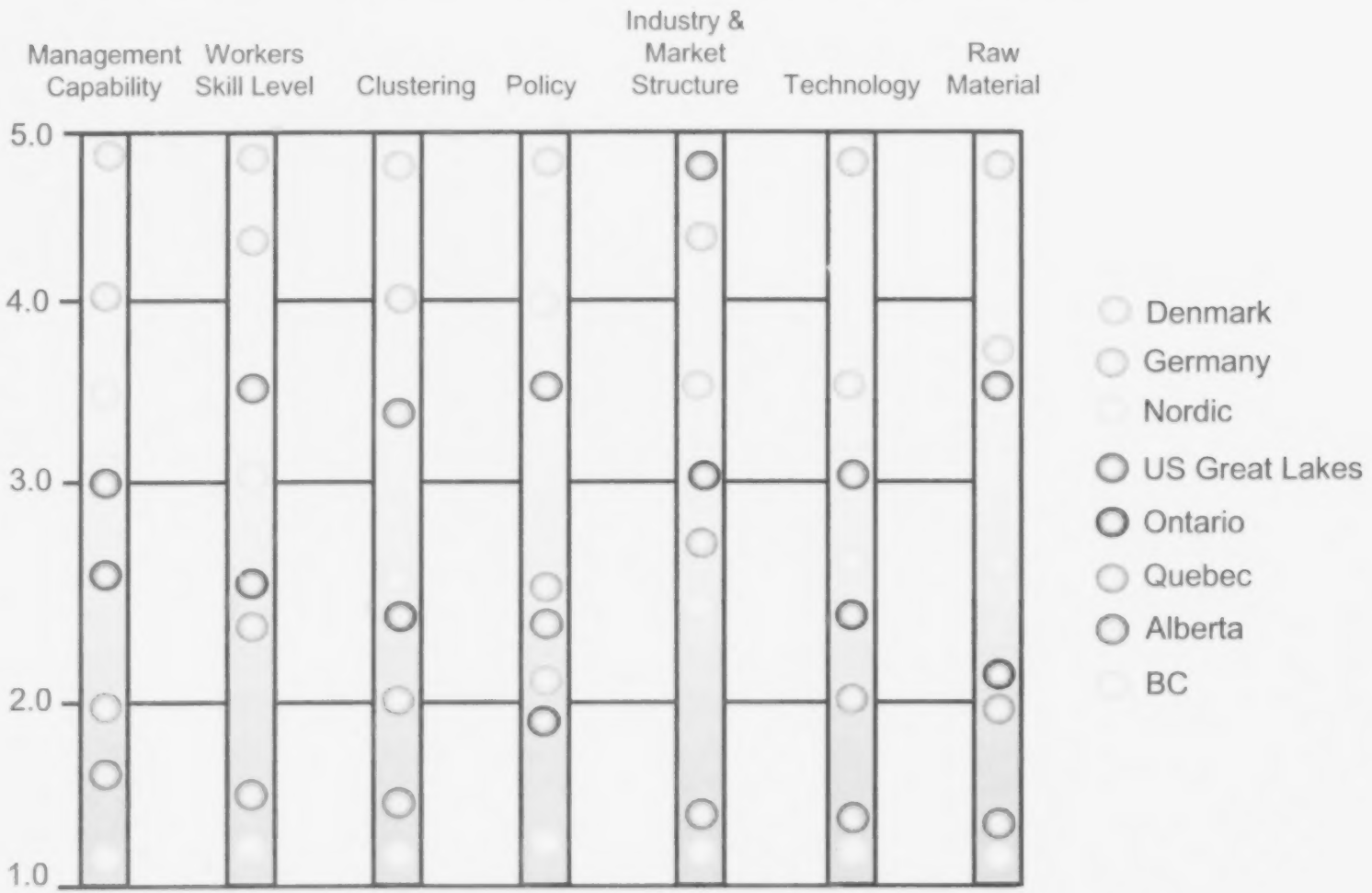
RAW MATERIAL



- Raw material suppliers in Europe cater to the specifications of the secondary users as these segments make up the majority of their sales whereas the North American lumber producers concentrate on the residential building market.

- Although the focus has not been on the value-added in North America there is relatively little trouble in sourcing material except in Western Canada where primary manufacturers look upon the remanufacturers as competitors, rather than as customers.

SUMMARY OF QUALITATIVE PERFORMANCE



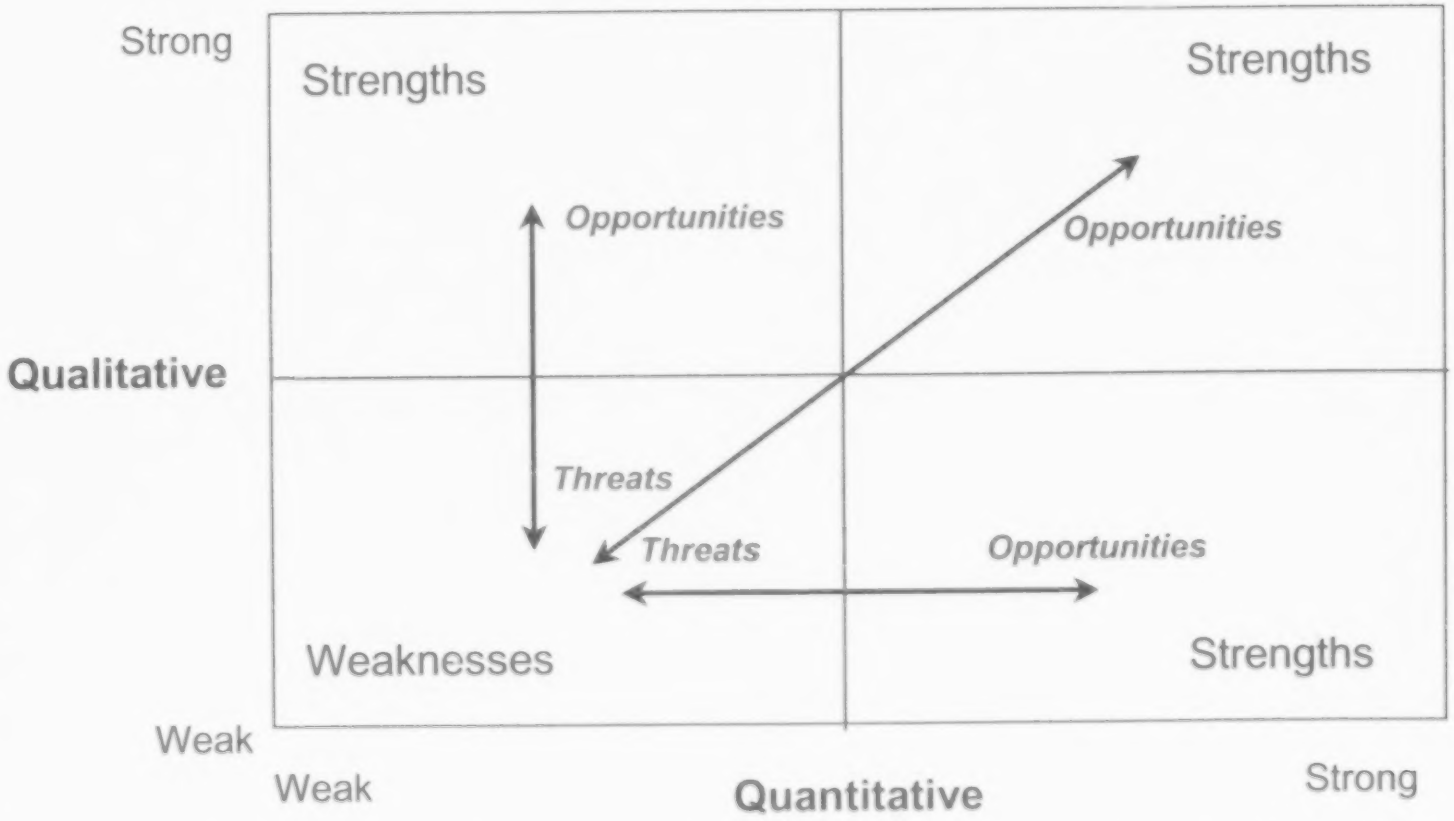
OVERALL RANKING OF THE BENCHMARK SECTORS BY QUALITATIVE BENCHMARK FACTORS

- The overall ranking reflects the level of development of value added wood manufacturing to high level business entities where they are considered on the same level as any other major manufacturing business.
- The lower rankings reflect the dominance of the primary industries in those regions where overall manufacturing skills are less prevalent.

SECTION 6

ANALYSIS – QUANTITATIVE/QUALITATIVE BENCHMARKING

DYNAMICS OF VALUE ADDED POSITIONING



Positioning performance on this matrix leads to policy direction (as described in quadrants). Placing the performance of competing benchmarks shows relative sources of competitiveness plus the distance and direction of new internal policy initiatives required to reassert strength in the value added sector

DYNAMICS OF VALUE ADDED POSITIONING

Qualitative	Quantitative: Weak	Quantitative: Strong
Strong	Poor cost/operational competitiveness, but competitive through qualitative factors: market segmentation, differentiation, innovation, restructuring, and infrastructure and institutional strength	Strong cost/operational competitiveness, and strong qualitative support. Industry flourishing and recognised at the national/regional level as a core business, with international competitiveness
Weak	Poor cost/operational competitiveness and poor qualitative position. Industry not competitive and unsupported. Drastic remedial action justified only if the fundamentals are in place	Strong cost/operational competitiveness, with weak qualitative support. Performance is sub-optimal and future competitiveness at risk. To capitalise, shifts in Policy, national strategy and business climate are required.

VALUE ADDED POSITIONING OF THE BENCHMARK SECTORS

- Ontario's competitiveness on quantitative factors is reasonable, but opportunities for improvement on these factors are limited.
- Several qualitative factors indicate potential for improvement – policy, work force skill levels, management capability and adoption of up-to-date technology.

VALUE CHAIN

High value added regions demonstrate high interdependency between value added manufacturers and suppliers of all types. Suppliers also demonstrate willingness to adapt products, demonstrate flexibility and support product development.

In some areas, particularly Germany, links evolve to geographic closeness and a *cluster* created.

In resource-based regions, (eg. Ontario, other Provinces, Nordic region), interdependency tends to be most pronounced at interface between commodity lumber producers and first level remanufacturers.

Clustering serves development of competitive advantage for cluster as a whole. Clustering represents opportunity for industry sector to capture additional value, foster increased growth.

VALUE CHAIN — ONTARIO

	Reman	Millwork	Furniture & Cabinets
Interdependency - degree of raw material sourcing from local suppliers in the value chain	Medium - Low Some dependence on local lumber manufacturers for feed stock, but other supplies readily available	Medium Using mix of domestic and imported supplies of both hardwood and softwood lumber	Low Panels generally obtained from lowest cost supply source, frequently from outside Ontario
Specialisation of interdependency - specialisation in the suppliers	Low Commodity grades supplied/purchased	Low-medium Intermediary suppliers providing species and grades not available from domestic sources	Medium Suppliers providing overlaid and cut-to-size panels
Key supplier sectors	Ontario softwood and hardwood lumber manufacturers, and importing agents and wholesalers	North American hardwood lumber and veneer manufacturers; import agents and wholesalers, domestic softwood lumber mfg.	North American MDF/PB panel manufacturers, North American hardwood lumber-veneer manufacturers, import agents and wholesalers
Key competitive value provided from the value chain	Readily accessible, high volume supplies.	Quality, fit for purpose, competitively priced raw material.	Quality, fit for purpose, competitively priced raw material.

VALUE CHAIN — QUÉBEC

	Reman	Millwork	Furniture & Cabinets
Interdependency - degree of raw material sourcing from local suppliers in the value chain	Medium Some dependence on local lumber manufacturers for feed stock, but other supplies can be sourced	Medium Using mix of domestic and imported supplies of both hardwood and softwood lumber	Medium Panels generally obtained from lowest cost supply source, sometimes from outside Québec
Specialisation of interdependency - specialisation in the suppliers	Low Commodity grades supplied/purchased	Low-medium Intermediary suppliers providing species and grades not available from domestic sources	Medium Suppliers providing overlaid and cut-to-size panels
Key supplier sectors	Québec softwood and hardwood lumber manufacturers, and importing agents and wholesalers	North American hardwood lumber and veneer manufacturers; import agents and wholesalers, domestic softwood lumber mfg.	Québec and North American MDF/PB panel manufacturers, North American hardwood lumber-veneer manufacturers, import agents and wholesalers
Key competitive value provided from the value chain	Readily accessible, high volume supplies.	Quality, fit for purpose, competitively priced raw material.	Quality, fit for purpose, competitively priced raw material.

VALUE CHAIN — BRITISH COLUMBIA/ALBERTA

	Reman	Millwork	Furniture & Cabinets
Interdependency - degree of raw material sourcing from local suppliers in the value chain	High Depend on local lumber mills for feedstock	Moderate Use imported hardwood, but local softwood	Low Purchase commodity panels from lowest cost supplier.
Specialisation of interdependency - specialisation in the suppliers	Very Low Commodity grades supplied/purchased, especially low grade which primary mills keen to sell.	Medium Some suppliers undertaking panel overlaying. Some lumber suppliers drying to meet user needs	Medium Overlaid panels being supplied with various faces.
Key supplier sectors	Softwood Lumber sourced in BC/AB	MDF/PB panel manufacturers Softwood and hardwood lumber producers	MDF/PB panel manufacturers
Key competitive value provided from the value chain	Low cost raw material. (Negative – suppliers offer limited flexibility.)	Quality, fit for purpose, competitively priced raw material	Quality, fit for purpose, competitively priced raw material

VALUE CHAIN — GREAT LAKES STATES

	Reman	Millwork	Furniture & Cabinets
Interdependency - degree of raw material sourcing from local suppliers in the value chain	Medium-High Local lumber manufacturers key supply for feed stock, but other supplies can be sourced, if at higher cost	Medium Using mix of domestic and imported supplies of both hardwood and softwood lumber	Medium Panels generally obtained from lowest cost supply source, sometimes from outside Québec
Specialisation of interdependency - specialisation in the suppliers	Low Commodity grades supplied/purchased	Low-medium Intermediary suppliers providing species and grades not available from domestic sources	Medium-High Suppliers providing overlaid and cut-to-size panels
Key supplier sectors	Domestic softwood and hardwood lumber manufacturers, and importing agents and wholesalers	North American hardwood lumber and veneer manufacturers; North American softwood lumber mfg.; import agents and wholesalers,	North American MDF/PB panel manufacturers, North American hardwood lumber-veneer manufacturers, import agents and wholesalers
Key competitive value provided from the value chain	Readily accessible, high volume supplies.	Quality, fit for purpose, competitively priced raw material.	Quality, fit for purpose, competitively priced raw material.

VALUE CHAIN — NORDIC

	Reman	Millwork	Furniture & Cabinets
Interdependency - degree of raw material sourcing from local suppliers in the value chain	Medium/Low Using std lumber from domestic sawmills (major part of the capacity owned by sawmill companies)	Medium Larger millwork co's key customers for sawmills – adaptation of products & services	Low Standard specifications (IKEA suppliers high specialisation & interdependency)
Specialisation of interdependency - specialisation in the suppliers	Medium/Low Standard specifications - easy to switch supplier	Medium Relatively high level of adaptation in products	Low Standard specifications (IKEA suppliers high specialisation & interdependency)
Key supplier sectors	Domestic sawmills	Domestic sawmills Traders (imported MDF) Domestic PB	Domestic EGP manufacturers Domestic PB Imported MDF
Key competitive value provided from the value chain	Low prices, supply reliability	Fir for purpose raw material	Low prices, flexibility (with IKEA: volumes, programmability)

VALUE CHAIN — DENMARK

	Reman	Millwork	Furniture & Cabinets
Interdependency - degree of raw material sourcing from local suppliers in the value chain	Low Using std lumber from Nordic sawmills (direct or via traders)	Medium/High Larger millwork co's key customers for sawmills – adaptation of products & services	High Well-developed domestic component manufacturing (EGP) – strong clusters (ownership)
Specialisation of interdependency - specialisation in the suppliers	Low Standard specifications - easy to switch supplier	High High level of adaptation in products, working with selected suppliers	Medium/High Possibilities for high adaptation but very competitive
Key supplier sectors	Nordic sawmills	Nordic sawmills Imported/domestic MDF/PB	Domestic EGP manufacturers Imported/domestic MDF/PB
Key competitive value provided from the value chain	Low prices, supply reliability	Fir for purpose raw material (low waste), suitable quality (not necessarily high)	Low prices, supply reliability & flexibility

VALUE CHAIN — GERMANY

	Reman	Millwork	Furniture & Cabinets
Interdependency - degree of raw material sourcing from local suppliers in the value chain	Low Imported std lumber from Nordic & E. European sawmills (direct or via traders)	High Mainly fragmented industry serviced by domestic component manufacturers/ merchants	High Furniture clusters with well-developed subcontracting structures (panels, further processing)
Specialisation of interdependency - specialisation in the suppliers	Low Standard specifications - easy to switch supplier	Medium/High Specialised window/door component manufacturing – grading by customer	High High level of adaptation in products & services but very competitive
Key supplier sectors	Nordic & Eastern European sawmills	Wholesalers/merchants Domestic/E.European component manufacturers	Domestic MDF/PB Component suppliers EGP (domestic/imported)
Key competitive value provided from the value chain	Low prices, flexibility (easy to switch)	Fir for purpose raw material, high quality, large scale component manufacturing for low unit costs	Fit for purpose, high quality but at competitive prices, product/process development support

CLUSTERING

The qualitative benchmarking also highlighted some differences with the use of clustering to secure competitive advantage. In the context of the globalization of markets and industries, clustering, (or developing local home-based advantages), may turn out to be the only source of competitive advantage.

Benchmark regions with strong and well developed clustering, (Denmark, Germany, Nordic and the Great Lakes States), demonstrate that leverage can be gained through effective development of clusters within the value added wood products sector to spur further growth of the sector.

This success demonstrates that cooperation between stakeholders can create significant leverage. It is critical that the Province, the primary producers and value added manufacturers embrace the concepts of value chain (from resource to end use) and clustering if Ontario wood products are to thrive in global markets and compete effectively against well established producers from other regions.

Mega-Sites in the European Wood Panels in 1998

In Europe there has been purposeful development of mega-sites and clustering

Illustration of cluster maps

'Horizontal' Clustering →

'Vertical' Clustering ↓

	Industry	Supporting Suppliers/Indust	Supporting Instit/Infra.	Interlinked Industry	Stakeholders
Resource	Forest Estate. Gov/Forest Owners	Nurseries Land Agents	Universities Research Centres	Tourism Agriculture	Envir. Stewardship Electorates Gov.Agencies
Harvesting and Transport	Contractor Base	Machinery,Fuels	Research Road, Rail Systems	General Transport	NGO,Unions Road users Gov.Agencies
Primary Processing	Sawmills, Chipping Hogging	Machinery, Fuels	Research Centres Training	Energy	Gov.Agencies NGOs, Unions
Secondary Processing	Reman,Panels, Pulp, PaperBiofuel	Machinery, Fuels Chemicals	Research Centres Training, Education, Financial	Composites, Printing, Publishing, Food Packaging	Gov.Agencies NGOs, Unions
Tertiary Processing	Specialisation, Coatings, Converting, Furniture, Parquet, Windows etc.	Machinery, Fuels Chemicals	Research Centres Design, Building Res.	Plastics, Metals Textiles	Gov.Agencies, Unions
Distribution	Merchants, Retailers, Wholesalers	Advertising, Logistics, Fuels	Road, Rail Systems Warehousing, E-Biz	DIY	Gov.Agencies Road Users
Final Consumption, Goods and Services	Consumers, Builders, Business to Business	Consumer Groups	Research Centres Design, Builders IT, e-Biz	Substitutes Consumer Finance	Health&Safety Gov. Agencies
Waste management, recycling	Contractors, Councils, Paper&Wood Produce	Machinery, Chemicals, Waste	Energy, Waste util MSW, Landfills	Energy, Composite Materials	Gov.Agencies NGOs, Electorate

Cluster maps list and connect the groups associated with an industry sector

Example cluster maps

'Horizontal' Clustering →

'Vertical' Clustering ↓

	Industry	Supporting Suppliers/Indust	Supporting Instit/Infra.	Interlinked Industry	Stakeholders
Resource	Forest Estate, Gov/Forest Owners	Nurseries Land Agents	Universities Research Centres	Tourism Agriculture	Envir. Stewardship Electorates Gov.Agencies
Harvesting and Transport	Contractor Base	Machinery,Fuels	Research Road, Rail Systems	General Transport	NGO,Unions Road users Gov.Agencies
Primary Processing	Sawmills, Chipping Hogging	Machinery, Fuels	Research Centres Training	Energy	Gov.Agencies NGOs, Unions
Secondary Processing	Reman,Panels, Pulp, PaperBiofuel	Machinery, Fuels Chemicals	Research Centres Training, Education Financial	Composites, Printing, Publishing, Food Packaging	Gov.Agencies NGOs, Unions
Tertiary Processing	Specialisation, Coatings, Converting, Furniture, Parquet, Windows etc.	Machinery, Fuels Chemicals	Research Centres Design, Building Res.	Plastics, Metals Textiles	Gov.Agencies, Unions
Distribution	Merchants, Retailers, Wholesalers	Advertising, Logistics, Fuels	Road, Rail Systems Warehousing, E-Biz	DIY	Gov.Agencies Road Users
Final Consumption, Goods and Services	Consumers, Builders, Business to Business	Consumer Groups	Research Centres Design, Builders IT, e-Biz	Substitutes Consumer Finance	Health&Safety Gov. Agencies
Waste management, recycling	Contractors, Councils, Paper&Wood Producers	Machinery, Chemicals, Waste	Energy, Waste-til MSW, Landfills	Energy, Composite Materials	Gov.Agencies NGOs, Electorate

'Integrated Commodity Forest Products Company'

'Nordic Sector' 'German Panels' 'Denmark Furniture'

'Complete Loop Forest Products Company'

JAAKKO PÖYRY
Jaakko Pöyry Consulting

CLUSTERING

For Ontario, keys to success in such efforts can be expected to include —

Vertical clustering through the value chain with

Raw material suppliers (panels, lumber) to promote specialization, flexibility and product development capabilities

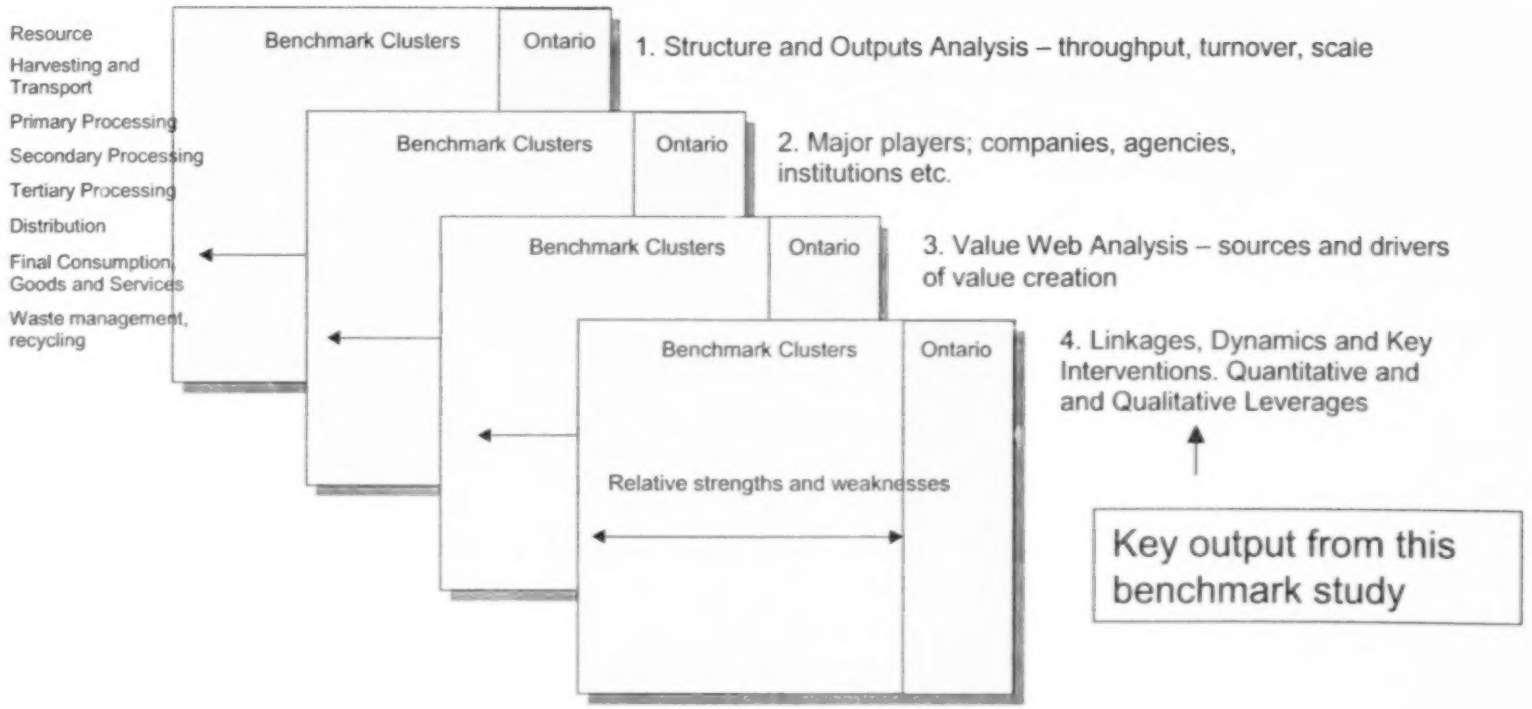
The Supply Chain (raw material to end-user) to share and promote efficiency improvements, competitiveness and innovation

Stakeholders (see also horizontal clustering) in supporting raw materials systems such as recycling - in terms of local government, consumers, industry (panels) and NGOs

Horizontal clustering through associated industries and institutions

Machinery and equipment producers, supporting suppliers and industries (chemicals, energy), supporting institutions (design, standards, management skills, know-how, marketing, technology adoption), interlinked industries (textiles, metals, plastics) and stakeholders (Government agencies, unions, NGO's).

Building the Ontario Cluster



The Ontario cluster can be both conceptualised and created from the cluster map

SECTION 7

INTERVIEW GUIDE

Introduction

The topics and questions set out in this interview guide were used as part of the qualitative benchmarking analysis. Readers are asked to note that the questions/topics were used only as a guideline for interviews that were generally conducted as unstructured discussions. Respondents included representatives of government departments and agencies, industry executives, academics and other researchers and knowledgeable observers with widely varied areas of interest and expertise. As a result, not all topics and questions were discussed with all respondents.

Workforce Skill Levels/Know How/Education & Training/Age

- To what extent has workforce had specialized training/education focused on wood products manufacturing?
- What specialized training facilities are available to companies/workers in wood products manufacturing?
- What is general education level of workers in manufacturing facilities?
- What is average age of workers in manufacturing facilities?

Labour Structure

- To what extent is work force unionized? Which union/unions?
- To what extent does union promote further education, training?
- What are prevailing wage rates?

Technology Adoption/Use/Investment

- What is average age/generation of machinery and equipment in use in manufacturing facilities?
- How many CNC machines generally found in facilities in the industry.
- To what extent is computerized control used in manufacturing process? In business

Management Capability

- What is average/general education level of executive management of manufacturing companies?
- To what extent do managers have formalized business management education/training? Management education/training focused on wood products processing?
- To what extent have middle managers and supervisors received business management education and training? Specialized education and training focused on wood products processing?

Raw Materials/Value Added Foundation

- Are appropriate raw materials generally available, with appropriate characteristics, (eg. dried to suitable MC), and in appropriate volumes?
- Are raw materials suppliers generally accommodating to needs of secondary processors? Willing to try to supply new products, (eg. different dimensions)?

Industry/Market Structure

- Are manufacturing facilities located appropriately to serve market needs effectively?
- Are manufacturing facilities of appropriate scale to be competitive in markets served? To grow with market growth? To grow to expand market reach?

Market/Buyer/Customer Sophistication

- Are customers demanding with regard to product quality and related characteristics?
- How demanding are buyers, (in one market), compared to buyers in another market?

Product Quality/Performance

- How do customers perceive quality and performance of products from manufacturers in jurisdiction under consideration?
- How do these customers perceive wood products manufacturers from other, (potentially competitive), jurisdictions?

Capital Availability

- Is debt and equity capital available in adequate supplies and under appropriate conditions to support competitiveness/growth of wood products manufacturers?

Clustering

- Are suppliers of related products, etc. (eg. resin manufacturers, equipment manufacturers, transportation services, etc.) readily available to wood products manufacturers in each area under consideration?
- How essential/important is nearby presence of such suppliers? Does presence of "cluster" really matter? Does cluster give wood products manufacturers competitive advantage?

Policies/Institutional Support

- Are there specific public policies, focused or general, which help or hinder secondary wood products manufacturers? How could such policies be changed/improved?

Other Success Drivers/Factors

- Can respondent identify any other factors/challenges which contribute to or impair the competitiveness/success of wood products manufacturers?

SECTION 8

RESPONDENT ORGANIZATIONS

During the course of the research for this project, the consulting team conducted interviews and less formal discussions and conversations with some 45 individuals in North America and another 30 individuals in Europe, representing a varied range of manufacturing and distribution industries, public sector agencies, education and research institutes, and industry associations. The information resources of other organizations in these same sectors provided research studies and other information that contributed to our work.

The organizations which contributed to this study through interviews with senior officials or by otherwise providing research information are listed below by category.

Education/Research Institutions – North America

University of British Columbia

Centre for Advanced Wood Processing Technology

Penn State University – School of Forest Resources

University of Wisconsin

University of Minnesota

Education/Research Institutions – Europe

EFI - European Forest Institute

Helsinki University of Technology, Department of Wood Products

METLA - Finnish Forest Research Institute

Dansk Teknologisk Institut – DTI Træteknik (Danish Technological Institute, Wood and Furniture)

Trätek – Institutet for Träteknisk Forskning (Swedish Institute for Wood Technology Research)

Albert-Ludwigs-University, Faculty of Forestry (Germany)

Public Sector/Gov't. – North America

British Columbia Ministry of Forests

Forest Renewal BC

Alberta Department of Resource Development

Ministêre des Ressources Naturrelles du Québec

Wisconsin Manufacturing Extension Partnership

Wisconsin Department of Commerce

Wisconsin Department of Natural Resources

Michigan Department of Natural Resources

Michigan Economic Development Corporation

Public Sector/Gov't. – Europe

Finnish Ministry of Industry and Trade

TEKES - The National Technology Agency (Finland)

NUTEK - Verket för näringslivsutveckling (Swedish Business Development Agency)

Miljø- og Energiministeriet, Skov- og Naturstyrelsen (Denmark)

Bundesministerium fur Ernährung, Landwirtschaft und Forsten (Federal Ministry for Agriculture and Forestry) (Germany)

Absatzförderungsfonds der deutschen Holzwirtschaft (Wood Promotion Fund for German Wood Industry)

Public Sector/Gov't. – North America (cont'd.)

Minnesota Dep't. of Trade & Economic Development

Indiana Department of Natural Resources

Indiana Department of Commerce

Indiana Business Development

Ohio Department of Natural Resources

Pennsylvania Department of Agriculture

PA Hardwoods Development Council

New York Department of Environmental Conservation

Canadian Forest Service

United States Forest Service

Industry Associations – North America

Council of Forest Industries

BC Wood Specialties Group

Wood Component Manufacturers Association

Canadian Lumbermen's Association

Structural Board Association

Hardwood Lumber Manufacturers Association

Ontario Lumber Manufacturers' Association

Industry Associations – Europe

Finnish Forest Industries Federation

Skogindustrierna (Swedish Forest Industries Federation)

SNIRI – Snickerifabrikernas Riksförbund (The National Association of the Swedish Joinery Factories)

SMI – Sveriges Möbelindustriförbund (The Swedish Furniture Industry Association)

STEF - Svenska Trävaruexportförening (Swedish Wood Export Council)

Association of Danish Furniture Industries (Føreningen Dansk Møbelindustri)

VSO - Vinduesproducenternes SamarbejdsOrganisation (Danish Association of Window Producers)

Industry Associations – Europe (cont'd.)

VDS - German Sawmilling Association

VHI - Verband der deutschen Holzwerkstoffindustrie (Association of German Wood Industry)

FEFPEB – Federation Europeenne des Fabricants de Palettes et Emballage en Bois

Manufacturers/Distributors – North America

Weyerhaeuser Company

Sun Pine Industries

Tembec Inc.

Domtar Inc.

Norbord Industries Inc.

Grant Forest Products

Mayfair Lumber Sales Ltd.

Goodfellow Inc.

Taiga Forest Products Limited

Trus-Joist International

Chasyn Wood Technologies Inc.

Manufacturers/Distributors – Europe

StoraEnso Timber

UPM-Kymmene Wood Products

Finnforest

AssiDomän Timber

Bodilsen A/S

VTI Vinderup Træindustri A/S

Skouhus & Junge A/S

Klenk AG